

**Economic and Social Council**Distr.: General
20 December 2010

Original: English

Commission on Sustainable Development**Nineteenth session**

2-13 May 2011

Item 3 of the provisional agenda*

Thematic cluster for the implementation cycle**2010-2011 — policy session****Policy options and actions for expediting progress in
implementation: waste management****Report of the Secretary-General***Summary*

Waste management and waste minimization represent challenges for all countries, and in developing countries, with their growing economies, rising incomes and rapid urbanization, all leading to rising waste volumes, those challenges are mounting. For dynamic urbanizing economies, defining a long-term waste management strategy for the coming decades is critical to fostering sustainable waste management. An effective long-term strategy should include the operationalization of integrated sustainable waste management systems.

Understanding the scale of generation of various categories of waste is fundamental to formulating appropriate policies. A number of new waste streams have emerged or have assumed greater importance, especially e-waste and hazardous waste streams. In many cases, conventional waste management systems need to be modified and upgraded, as they were not designed to address these trends.

Implementation of waste management strategies requires coordinated efforts by international agencies, local governments (within their jurisdictions), national Governments, civil society, the informal waste sector and the private sector. Reducing waste production, recycling waste and reusing materials form the basis of sustainable waste management. Municipal solid waste management in many developing countries requires strengthening, and in this regard the availability of financial resources for building waste management infrastructure and of technical and managerial skills for system management need to be enhanced. Public-private partnerships could be further explored as a means of increasing availability of and access to financial resources.

* E/CN.17/2011/1



Contents

	<i>Page</i>
I. Introduction	3
II. Strategy and policies for waste management	3
A. Defining a long-term waste management strategy within the context of sustainable development and poverty eradication	3
B. Improving waste management systems, infrastructure and technology	6
C. Sustaining the implementation of environmentally sound waste reduction, reuse and recycling	10
D. Strengthening the implementation of effective e-waste and hazardous waste policies and strategies	11
E. Management of specific wastes	13
F. Improving agricultural waste management	16
III. Strengthening an enabling environment for implementation	17
A. Providing capacity-building and technology transfer for effective waste management ...	17
B. Financing and investing in sustainable waste management	19
C. Building partnerships	21
IV. The way forward	21

I. Introduction

1. The present report is a contribution to the discussions to be held at the Intergovernmental Preparatory Meeting on policy options and possible actions to expedite progress in waste management. It responds to the challenges and obstacles highlighted in the report of the Commission on Sustainable Development at its eighteenth session (E/CN.17/2010/15). The present report was prepared jointly by the Department of Economic and Social Affairs of the United Nations Secretariat and the United Nations Environment Programme (UNEP). It draws on inputs provided by the United Nations system, in particular the secretariat of the Basel Convention on the Control of the Transboundary Movements of Hazardous Wastes and their Disposal,¹ the World Health Organization (WHO), the Food and Agriculture Organization of the United Nations (FAO), the United Nations Industrial Development Organization (UNIDO) and the International Atomic Energy Agency (IAEA). The report should be read in conjunction with the report of the Secretary-General on sustainable consumption and production, which will also be before the Commission's Intergovernmental Preparatory Meeting.

II. Strategy and policies for waste management

A. Defining a long-term waste management strategy within the context of sustainable development and poverty eradication

2. Waste management and waste minimization are challenges everywhere, and in developing countries, with their growing economies, rising incomes and rapid urbanization, all leading to rising waste volumes, those challenges are mounting. The barriers to effective management and minimization include lack of data, information and knowledge on waste scenarios, lack of comprehensive regulations and weak enforcement of existing legislation, weak technical and organizational capacities, poor public awareness and cooperation, and lack of funds. The institutional framework has generally been weak, with very few, or no national associations or city champions in the field of waste management.

3. Priorities, policy and regulatory frameworks, institutional capacities and "maturity" of the waste business are at different levels across the world. While some countries have positioned waste as a resource in the national economy, many countries in the developing world, especially low-income countries, are still struggling to provide basic infrastructure and services for waste collection and disposal. It is therefore important that the right enabling framework be established on a timely and comprehensive basis to address local circumstances. At the same time, all countries could benefit from an approach that aims at waste minimization as well as the recovery, recycling and reuse of various waste types as productive resources.

4. Coping with waste management would benefit from a shift to sustainable consumption and production and a delinking of economic growth and environmental degradation. Governments at all levels, businesses and consumers need to make significant changes in their policies, activities and choices if they are to achieve the

¹ United Nations, *Treaty Series*, vol. 1673, No. 28911.

shift to sustainable consumption and production. The waste strategy should ideally address the whole life cycle, beginning with minimization of waste — including through eco-efficient product design — and continuing through to recycling and reuse (two of the 3Rs), with disposal only of those residuals not recyclable and reusable at acceptable cost and then only in an environmentally and socially sound manner. Closed-loop systems based on industrial ecology — where one firm's or industry's waste becomes other firms' or industries' raw materials — constitute a useful model whose adoption would be desirable. Japan is one example of a country that has implemented successful policies towards waste minimization and effective recycling, resulting in relatively low quantities of waste disposed per capita (430 kilograms (kg) per capita, which is only about two thirds of the Organization for Economic Cooperation and Development (OECD) average and on a par with the figure for South Africa).² All countries, even those that have progressed farthest, need to achieve much greater progress if there is to be any possibility of realizing the ultimate objective of “zero waste” economies and societies.

National policies and strategies

5. Traditionally, national waste management policies and strategies have been largely an end-of-life activity, though recycling rates have risen in many countries and, with respect to some materials in some countries, are already high. Recycling in developing countries is frequently organized in the informal sector, where livelihoods of poor people are directly dependent on the recycling economy.

6. Approaches have evolved over time to examine product management over the course of the life cycle. These “cradle to grave” approaches (where “grave” implies that disposal is still the default option for dealing with waste) have more recently begun to be supplanted by a “cradle to cradle” approach, which stresses much more centrally the recovery of economically useful materials to be fed back into production processes. At the same time, waste minimization has come to occupy a more central place in waste policies. This shift in emphasis has gone hand in hand with a focus on dematerialization, whereby the goods and services that people value are delivered using fewer materials (along with less energy). With this evolution in waste management philosophy and approach has come an evolution in waste management policies and practices.

7. For dynamic urbanizing economies, defining a long-term waste management strategy for the coming decades is critical to fostering sustainable waste management. An effective long-term strategy must include the operationalization of integrated sustainable waste management systems, which comprise a variety of activities, including reduction, reuse, recycling and composting, operated by a variety of stakeholders at various scales. Not only technical and operational aspects, but also financial, training, legal, institutional and economic factors and linkages must be addressed in an integrated manner in order for a system to function sustainably.³

8. A key challenge is to devise integrated waste management systems that effectively incorporate the informal sector and communities, upgrading both their

² *Trends in Sustainable Development: Chemicals, Mining, Transport and Waste Management* (United Nations publication, Sales No. E.10.II.A.5), p. 30.

³ United Nations, Department of Economic and Social Affairs, “Innovative approaches and strategies for integrated waste management” (2010).

skills and their working and living conditions. The informal sector's contribution normally includes the collection, recycling and disposal of solid wastes, while communities can be involved in decentralized composting. The lack of such integrated strategies hinders environmental improvement and perpetuates the extreme poverty of informal sector waste-pickers.

9. Implementation of new strategies on management of waste, including hazardous waste, requires coordinated efforts by international agencies, local governments (within their jurisdictions), national Governments, civil society and the private sector. Privatization contracts and legislation should be flexible enough to permit the participation of small-scale service providers.

10. To manage waste effectively, a long-term strategy should also include the development of a public awareness programme, and waste management infrastructure planning, as well as economic instruments such as household user fees, landfill taxes, and deposit-refund schemes to encourage consumers to reduce waste and increase recycling (see boxes I and II). The strategy should consider programmes and legislation on extended producer responsibility which encourage recycling and discourage the production of goods that are difficult to recycle. Economic returns from resource saving measures should be considered in overall policy and planning. Additionally, policy decisions must be sustained despite changes in leadership.

Box I

Incentives for waste reduction: Volume-based waste fees collection system — Republic of Korea

Prior to 1995, all municipalities in the Republic of Korea levied waste fees on households through a property tax or monthly lump-sum fee. Under this fixed-fee system, as the cost per residence remained constant regardless of the amount of waste generated, there were no incentives for households to reduce the waste they produced. Introduced in 1995, the volume-based waste fee system of the Republic of Korea is a pay-per-sack scheme under which households are required to place residual waste in prepaid sacks, while recyclables are collected free of charge. Different municipalities levy different charges for their bags under the scheme. For example in Yongsan-gu, prices range from 100 won for a 5-litre bag up to 1,780 won for a 100-litre bag for general waste.

In the Republic of Korea, the quantity of municipal solid waste was reduced by 15.95 per cent in the period from 1994 to 2006. Meanwhile, the recycling rate increased from 15.4 to 57.2 per cent over the same period.

Source: Adapted from K. Y. Kim, Performance of waste management policy in Korea: volume-based waste fee system and packaging waste extended producer responsibility (Republic of Korea, Ministry of Environment, 2008), policy paper.

Box II**Economic incentives for recycling in Brazil**

In Latin America, there are wide variations in the practice of recycling across countries, owing largely to the systems of rewards and punishments that are in place. According to Brazil's Aluminium Association, about 80 per cent of the 9.5 billion aluminium cans sold in 2000 were recycled, which means that Brazil ranks with, for example, Japan among the world's recycling leaders. Whereas Japan bases its system upon responsible citizenship, Brazil uses economic incentives. In the major metropolitan areas, there are many recycling centres which buy back recyclable materials for cash or discounts on food.

Source: Report of the Secretary-General on the review of the implementation of Agenda 21 and the Johannesburg Plan of Implementation: waste management (E/CN.17/2010/6).

B. Improving waste management systems, infrastructure and technology

1. Improving informal systems of waste management

11. The recycling segment of the waste industry in developing countries is predominantly controlled by the informal sector. Typically, 1 per cent of the urban population in developing countries is involved in informal scavenging and a major proportion of the scavengers includes women and children. A recent estimate reveals that up to 15 million people engage in waste collection for their livelihood (see boxes III and IV). Over half a million waste-pickers have been reported in Brazil and the country has close to 2,400 companies and cooperatives involved in recycling and scrap trading. In the city of Buenos Aires, the economic impact of waste scavenging has been estimated at US\$ 170 million per year; and India is estimated to have at least 1 million waste scavengers. Estimates from several cities and towns of developing countries of Asia and the Pacific show that as much as 20-30 per cent of the waste generated in cities is recycled by the informal sector.⁴

⁴ United Nations Environment Programme report on "Waste management as a sector of Green Economy" (to be released in February 2011), p. 8.

Box III

Addressing issues of informal waste-pickers in Brazil

In Brazil, organized waste-pickers are seen as legitimate stakeholders and have established formal contracts with businesses. The cash transfer programme *Bolsa Familia* compensates families for shifting their children from waste-picking to school attendance, which has helped at least 40,000 children to have access to education and good health. Brazil houses at least 500 waste-picker cooperatives, with about 60,000 members. Some of them enable their members to earn US\$ 300 per month, which is twice the minimum wage.

Source: M. Medina, *The World's Scavengers: Salvaging for Sustainable Consumption and Production* (Plymouth, United Kingdom, Altamira Press, 2007). Available from http://books.google.com/books?id=daCm1Eck0pkC&printsec=frontcover&dq=the+world's+scavengers+by+martin+medina&source=bl&ots=ZlvpYA7CKe&sig=vv-m1C5_8dmc02Hh-mRCrH8NZa4&hl=en&ei=vTYdTdHIPPZce3N1Z0K&sa=X&oi=book_result&ct=result&resnum=1&sqi=2&ved=0CBYQ6AEwAA#v=onepage&q&f=false

Box IV

Addressing issues of informal waste-pickers in Egypt

The *Zabbaleen*, a minority community in Cairo, has been engaged in informal waste-picking since the 1930s. After the establishment of associations in the 1970s, and the beginning of a Zabbaleen Environment and Development Programme in 1981, with support from the Ford Foundation, the World Bank, Oxfam and other entities, the working conditions and basic infrastructure for waste collection and sorting were improved considerably. A primary school, a paper recycling project, a weaving school, a health centre and a small industries project have been established to support waste-pickers.

2. Strengthening capacities to manage growing and increasingly diversified waste streams

12. Industrialization, urbanization, growing populations and consumptive lifestyles have led to an exceptional increase in the quantum and type of waste generated around the globe. Per capita waste generation rates in many developing countries have now crossed the one-kilogram-per-day mark. Industrial waste generation rates are also very high, as many industries are primary industries producing raw materials for further processing. Understanding the scale of generation of various categories of waste is fundamental to establishing the appropriate policies. A number of new waste streams have emerged, including e-waste and hazardous waste especially.

13. The complexity, costs and coordination of waste management require multi-stakeholder involvement at every stage of the waste stream process and intensive capacity-building of all stakeholders including, but not limited to, technical

personnel in local governments, municipalities and other related institutions who are usually responsible for the development and implementation of waste management plans.

14. Comprehensive efforts need to be put in place to strengthen capacity, including development and dissemination of training packages, manuals and guidelines on various aspects of waste management, technology compendiums, awareness-raising materials, case studies and best practice. A comprehensive online information clearing house could be developed for easy accessibility by different users. Series of workshops and training programmes need to be conducted in all regions. Efforts should also be made to provide hands-on experience through demonstration projects. A network of capacity-building institutions could help to institutionalize the effort.

3. Improving access to appropriate technologies and infrastructure

15. In achieving national waste management goals, Governments need to identify the best infrastructure as well as the best technology in terms of their appropriateness and feasibility of application. Such identification and choice would depend on resource requirements and local applicability.

16. While the success of developed countries has, to a certain extent, been due to the adoption of modern technologies at every stage of waste management (from waste collection through segregation, recovery/recycle, transport, treatment and disposal), the extent of the infusion of modern technologies in developing countries has been rather limited and efforts in this regard need to be intensified if effective waste management is to be realized. Many cities in developing countries have not been able to set up adequate systems for the collection of municipal and industrial waste owing to a poor infrastructure base; in rural areas, waste management infrastructure is largely non-existent. Economic and financial limitations have forced many developing countries to adopt technologies on the basis mostly of cost considerations rather than of sustainability criteria.

17. Organic waste, which is still a sizeable portion of waste in many developing nations, should be suitable for reduction through composting. As regards incineration, the high start-up and operational costs are a major barrier to successful adoption of this technology in many developing countries.

18. There is a need in developing countries for information exchange with, and dissemination of waste treatment technology (particularly innovative reduce, recycle and reuse (3R) technology) by, developed countries. For the Western Asia region, a high priority is the strengthening of waste management capacities of local authorities. Meanwhile in Africa, the application of advanced small-scale digesters to produce biogas (see box V), as well as composting of fertilizer and/or animal feed from organic waste, needs to be implemented more widely. In some developing countries in Africa, South America and Asia, large-scale utilization of waste-to-energy plants could be feasible, which would benefit from the involvement of private companies.

19. To determine appropriate technologies, assessment methodologies such as Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis, GAP analysis and Political, Economic, Social, and Technological (PEST) analysis, as well as technology assessment methodologies, such as Sustainability Assessment of

Technologies (SAT), life-cycle assessment, Cleaner Production-Energy Efficiency (CP-EE) assessment and cost-benefit analysis, could be applied.

20. There is a need as well to develop and disseminate technology databases and create platforms where technology suppliers and technology acquirers can interact and establish partnerships.

Box V

Biogas digester: case study of China

In Shipai Village, Jianshi County, Hubei Province, China, more than 90 per cent of a total of 227 households have installed a 10-cubic metre (m³) biogas unit. The gas produced per household on a daily basis, which is used for both lighting and cooking, amounts to 1.0-1.2 cubic metres. This has resulted in a savings on electricity and coal of 136 renminbi per year. Use of digested slurry has resulted in a savings on chemical fertilizer. The annual labour savings are substantial. In addition, social benefits have been realized, such as employment for technicians, improvement of health and increased participation in social work by women.

Source: Report of the Netherlands Development Organization (SMV) (2006); see also www.unapcaem.org.

4. Increasing research on and development of region- and country-specific technologies

21. The fact that waste quantities and characteristics are location-specific requires technologies to be adapted to local conditions. In the area of research and development of region- and country-specific technologies, countries should:

- Strengthen research and development institutions by building indigenous capacity to undertake targeted work on development and adaptation of waste management technologies. This should not be limited to disposal technologies but should also include other aspects of waste management such as: segregation systems, treatment of waste, recycling technologies.
- Test the application of such technologies in the context of developing countries through pilot demonstration projects so as to build confidence. This in turn will require extensive data collection on waste characterization and quantification to facilitate design and development of technologies.
- Strengthen capacity of decision makers in the area of technology assessment and selection.
- Develop information systems and/or technology databases, including new and cutting-edge recycling technologies.
- Develop locally relevant technologies.

5. Improving data collection, analysis and monitoring

22. Availability of reliable and representative data is a crucial requirement for the design of waste management systems and the formulation of appropriate policies. However, obtaining such data is a difficult undertaking in many countries. Definitions vary across countries, as do reporting disciplines. Despite efforts by international organizations to facilitate comparison by providing standardized methods for reporting waste-related data, the exercising of caution is quite often required when utilizing those data.

23. There is an urgent need to improve the data collection and reporting process, which could be achieved by:

- Developing internationally agreed-upon procedures for data collection and analysis and reporting formats.
- Persuading governments, both national and local, to collect reliable and representative data, which in most cases will require intensive fieldwork, monitoring and analysis. The data would need to be updated periodically, as the waste quantity and waste characteristics will be rapidly changing.
- Developing an international waste database, which should be highly comprehensive and include all types of data, for example, on waste quantification and characterization (local level aggregated to national level); collection and recycling; policies and regulations; and monitoring and analytical capacities.

C. Sustaining the implementation of environmentally sound waste reduction, reuse and recycling

24. Experience has shown that the issue of waste management needs to be addressed through integrated approaches and requires the involvement of various stakeholders. Reducing waste production, recycling waste and reusing materials should form the basis for sustainable waste management. An ideal framework for sound waste management could build on the 3Rs (reduce, reuse and recycle). However, there is no set model for establishing sound waste management in a particular area. Instead, what is required is outside-the-box thinking and an assessment of potential stakeholders' involvement which is dependent on the specific scenario presented by a town, community, city or country.

25. In developing countries, oftentimes the public sector is ill equipped to take on the task of waste management, despite the size of its share of local government resource allocation. In many cases, between 20 and 50 per cent of a municipality's budget is spent on solid waste management alone. Success requires cooperation and partnerships, including greater involvement of the private sector, so that the burden imposed on government budgets can be relieved. Some Governments have already outsourced to the private sector certain waste management functions.

26. One of the main reasons for current unsustainable waste management is the fact that waste is traditionally thought of as having no value. Creating incentives that make waste minimization financially rewarding can change this perception, as can promoting awareness among key stakeholders on the related benefits and the know-how to be derived from sound waste management. This can be achieved

through a variety of approaches, including education — formal, non-formal and informal — as well as public awareness campaigns and demonstrations to showcase techniques and cost-saving opportunities associated with resource efficiency and sound waste management. Other measures that can effectively raise awareness include the utilization of environmental accounting systems that factor in the waste costs of a product and corporate environmental information disclosure (CEID), which reveals information about a firm's environmental performance to its consumers, its investors, the Government and the community at large.

D. Strengthening the implementation of effective e-waste and hazardous waste policies and strategies

27. Electrical and electronic waste (e-waste) generation is steadily increasing owing to large-scale use of electronic and electrical equipment and e-waste is one of the fastest growing segments of the waste stream. It is estimated that 315 million personal computers became obsolete in 2004, and 130 million mobile phones were disposed of in 2005 (see box VI). In 2008, more than 1 in 3 people worldwide — 2.5 billion in total — used a mobile phone and that figure is expected to rise by a factor of up to 400 million new subscribers each year. While this trend is responsible for immeasurable advances worldwide, discarded mobile phones are posing a growing and potentially alarming environmental threat.

Box VI

Mobile Phone Partnership Initiative and Partnership for Action on Computing Equipment

The Mobile Phone Partnership Initiative (MPPI) was launched in 2002, during the sixth meeting of the Conference of the Parties to the Basel Convention, when 12 manufacturers signed a Declaration whereby they entered into a partnership under the Basel Convention, and in cooperation with other stakeholders, to develop and promote the environmentally sound management of end-of-life mobile phones.

Following the success of the Partnership Initiative, the Partnership for Action on Computing Equipment (PACE) was launched at the ninth meeting of the Conference of the Parties to the Basel Convention, which was held in Bali, Indonesia, in June 2008. PACE is a multi-stakeholder partnership that provides a forum for Governments, industry, non-governmental organizations and academia within which to tackle the challenges of environmentally sound management, refurbishment, recycling and disposal of used and end-of-life computing equipment.

28. Next to municipal solid waste, hazardous waste (including industrial, health-care and domestically produced hazardous wastes) constitutes a major component of global waste statistics. The Basel Convention has estimated the amount of global hazardous waste at 338 million metric tons per year and transborder movements as accounting for close to 9 million tons.

29. Although some countries are taking steps in the right direction, many developing countries and countries with economies in transition still do not have the necessary expertise and infrastructure to handle and manage e-waste and hazardous waste in an environmentally sound manner. Collection, treatment and disposal of hazardous waste are beyond the traditional capacity of the local governments that manage municipal waste. Numerous obstacles have been identified by developing countries in regard to their ability to manage these waste streams in an environmentally sound way. These include: lack of easily accessible information (on flows, quantities, available technology, and legislative and trade requirements of countries importing new products, which increasingly require strict standards for minimization and reuse, recycling and recovery); lack of trained personnel; inadequate legislation; inadequate infrastructure for collection, recycling and recovery; lack of public awareness; and lack of economic alternatives to activities carried out by the informal sector and small family repair shops.

30. A comprehensive e-waste management approach should address technical and financial capacity requirements and create an enabling environment focusing on policies and financial incentives that will attract the private sector.

31. Projects should also be in place for developing a comprehensive inventory of sources, quantities and composition of e-waste and hazardous waste. Both end-of-the-pipe and prevention-at-source strategies should be devised to ensure the abandonment of unsound practices. Local as well as national Governments should renew their efforts to raise awareness, mobilize all stakeholders, encourage and facilitate environmentally sound management of e-wastes during their collection, storage, and transport to repair or refurbishment workshops. Capacity-building and training, particularly of small businesses, will contribute to the improvement of quality control in the repair and refurbishment workshops, and will yield both environmental benefits and benefits to workers' health, without compromising the economic returns.

32. Large quantities of e-waste are being exported to developing countries for the purpose of reuse, repair, refurbishment, recycling and recovery of non-ferrous and precious metals at facilities that do not always operate under sound environmental conditions. Some end-of-life equipment is exported in the guise of donations and charitable contributions.

33. Significant quantities of hazardous waste are transported to developing countries in Africa, Asia and the Caribbean and, increasingly, to Eastern and Central Europe. The United States of America exports more than 50 per cent of its e-waste to countries such as India and China. The average cost of recycling a single personal computer in the United States is \$20, while in India the same activity would cost just \$2 per machine. According to Greenpeace, in 2003, in the United Kingdom of Great Britain and Northern Ireland alone, at least 23,000 metric tons of undeclared or "grey" market electronic waste were shipped illegally to the Far East, India, Africa and China. Import and export statistics provided by the parties to the Basel Convention for the year 2000 indicate that there were imports of more than 17.5 million tons designated as used electrical and electronic assemblies or scrap.

34. In this context, international cooperation is crucial, the market should be regulated and strict control over the import and export of hazardous wastes should be enforced. There is a need as well to enhance the ability of countries, especially developing nations, to implement and enforce the provisions of the Basel

Convention. This would require the strengthening of national and regional mechanisms designed to support multilateral agreements and would include the promotion of information-sharing and sanctions against illegal trafficking.

E. Management of specific wastes

Radioactive waste

35. Practically all countries generate radioactive waste, whether from the production of nuclear energy, from the use of radioisotopes for medical diagnosis and treatment, from the use of nuclear methods for improving crops and food safety, or from various research and industrial applications. National Governments should ensure that appropriate safety measures are applied to the management of the radioactive waste that their economies generate. National strategies, plans and corresponding actions for managing radioactive waste must be developed. The establishment of a proper legal framework, regulatory infrastructure, policies and strategies is a prerequisite in this regard.

36. Internationally, the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management is the only legal instrument directly addressing these issues on a global scale and is thus an important tool for advancing the safe management of radioactive waste and spent nuclear fuel. The Joint Convention, a treaty under the auspices of IAEA, aims to achieve and maintain a high level of safety worldwide. Every three years, the contracting parties thereto (57 as of August 2010) prepare national reports for their review meeting. The radioactive waste managed by contracting parties to the Joint Convention covers 90 to 95 per cent of all radioactive waste that is generated globally; for spent nuclear fuel, the percentage is even larger. The Joint Convention is useful not only for countries that have nuclear power programmes but also for countries that use radioactive material solely in medical and industrial applications.

37. In addition to its responsibilities under the Joint Convention, IAEA contributes to the safe management of radioactive waste by publishing safety standards and providing assistance to member States in their application, which includes technical cooperation, training, peer reviews and advisory missions on regulatory frameworks and national infrastructure.

Health-care waste

38. Inadequate and inappropriate handling of health-care waste may have serious public-health consequences and a significant impact on the environment. Sound management of health-care waste is thus a crucial component of environmental health protection.

39. Epidemiological studies indicate that a person who incurs one needle-stick injury from a needle used on an infected source patient has risks of 30 per cent, 1.8 per cent and 0.3 per cent, of becoming infected with hepatitis B virus (HBV), hepatitis C virus (HCV) and HIV, respectively. In both the short and the long term, the actions involved in implementing effective health-care waste management programmes require multisectoral cooperation and interaction at all levels. Policies should be devised and coordinated globally, with the management practices implemented locally. Establishment of a national policy and a legal framework.

training of personnel and raising public awareness are essential elements of successful health-care waste management.

40. Key priorities are: to ensure that appropriate resources are allocated to support the implementation of national health-care waste national plans; to also ensure, when planning for mass immunization campaigns, that the facilities necessary for safe treatment and disposal of large amounts of waste produced in a short period are made available well ahead of time; and to further ensure that appropriate and affordable technologies for health-care waste treatment are developed and implemented locally (see box VII).

Box VII

Bir Hospital, Kathmandu

As Nepal has no medical waste management infrastructure, many hospitals simply dispose of infectious waste along with the municipal waste which piles up on city streets. Bir Hospital, Kathmandu, with about 400 beds, is Nepal's oldest hospital. It is run by the National Academy of Medical Sciences. It has recently installed two 175-litre autoclaves in a dedicated waste treatment facility in order to combat this public-health threat and practices in model wards are being expanded. Health Care Foundation Nepal, Health Care Without Harm and the World Health Organization are supporting the effort.

A waste management committee has been established and hospital staff have helped develop segregation procedures and adapt trolleys to segregation of waste at the bedside. To foster waste management: syringes are destroyed immediately after use by needle cutters and destroyers; mercury thermometers and sphygmomanometers are being replaced; infectious waste is transported to the treatment centre separately and dealt with in different parts of the building; non-infectious plastic, paper, glass and metal are sold to recyclers; and infectious waste is disinfected in autoclaves which have been validated using chemical and biological indicators and are regularly tested to ensure that they continue to work effectively.

Marine waste

41. The influx of litter into the world's oceans is estimated to exceed 6.4 million tons annually and the diversity, distribution and volume of that litter are increasing. While there are regional variations, approximately 80 per cent of marine litter comes from land-based sources. This is a global issue, affecting many coastal areas, enclosed or semi-enclosed seas, and all the oceans — both on and below the water's surface. The solid waste can negatively impact humans, wildlife, habitats and the economic health and stability of coastal communities. As the international community has just concluded its celebration of the International Year of Biodiversity, it is important to highlight the fact that litter can lead to loss of marine biodiversity (for example, through accidental catch by "ghost" nets), loss of ecosystem functions and services, loss of revenue (for example, from reduced catch and reduced tourism), loss of livelihoods of community groups, and increased costs

incurred owing, for example, to beach clean-ups). Modest estimates indicate that the cost of marine litter to the 21 Asia-Pacific Economic Cooperation (APEC) countries alone is US\$ 1.3 billion per year. In Australia, close to \$6.5 million is spent annually on clean-up activities.

42. It is essential to improve awareness among Governments, communities and industry of the economic and environmental implications of marine litter and to provide guidance and practical advice on targeting resources so as to mitigate the impacts of marine debris. There are three actions to be considered by the policymaker: prevention of litter generation and entry into the sea; observation of ambient marine litter stock levels at sea; and clean-up of litter once it is in the ocean or on the coasts. A diverse strategy comprising regulations, market-based instruments and community initiatives is required to address the marine litter problem.

Plastic waste

43. The world's annual consumption of plastic materials has increased from about 5 million tons in the 1950s to nearly 100 million tons at present; thus, 20 times more plastic is produced today compared with 50 years ago. Waste plastics are becoming a major component of the solid waste stream. It is estimated that plastics constitutes 15 to 40 per cent of municipal waste, with the proportion depending upon the economic profile and lifestyle and consumption patterns. Large quantities can be found as litter spread on land and at sea, which is being burned, buried or open-dumped. Wherever possible, plastic should be replaced with biodegradable materials; and production of biodegradable plastics should be considered.

44. The negative impacts of unavoidable waste plastics can be addressed or minimized by recycling and converting them into a valuable resource. In most situations, plastic waste recycling could be economically viable, as it generates resources that are in high demand. Plastic waste recycling also has greenhouse gas emission reduction potential on two counts: (a) the fuel generated from waste plastic can replace an equivalent amount of fossil fuels; and (b) the formation of pockets of anaerobically decomposed organic waste resulting from the co-disposal of waste plastic in landfills can be avoided.

45. Plastic waste recycling is feasible through mechanical recycling (also called material recycling) which entails utilization of the technologies that reprocess waste plastics into similar or different plastic products without modifying their initial chemical structure. These technologies have the potential for creating cheaper products, as in most cases recycled plastic costs less than virgin plastic.

46. Feedstock recycling (or chemical recycling) is a viable alternative: plastic waste is recycled as raw materials, fuel oil and industrial feedstock by altering its chemical structure. These products reduce the dependence on scarce materials: for example, through the partial replacement in steel production of metallurgical coke with plastics. Combustion of plastic waste can be used in energy recovery (or thermal recycling).

Metal waste

47. Metals possess the advantage of being inherently recyclable and can, in principle, be used over and over again, thus saving energy and minimizing the

negative environmental impacts associated with the mining of virgin material. The UNEP Resource Panel has stated in a recent report that for only a limited number of metals, such as iron and platinum, is the end-of-life recycling rate above 50 per cent. Still, despite the often low recycling rates, there is significant potential for improvement.

48. Globally, the growing metal stock can serve as huge mines above ground. Exploiting this potential can contribute to a reduction in the extraction of metals from primary sources and would also contribute to the decoupling of resource use from economic growth and thereby result in considerable energy savings.

F. Improving agricultural waste management

1. Developing national laws on agricultural waste management

49. There is an urgent need to develop national waste management strategies and national laws on agricultural waste management, including disposal of pesticide containers. Currently, agricultural legislation focuses primarily on agricultural production and worker and consumer protection. Waste-related provisions in agricultural legislation most frequently consist in references to specific waste or wider environmental legislation. Provisions that are directly or indirectly related to waste treatment and disposal should be included in national legislation.

50. FAO recommends that national pesticide law should address the issue of the disposal of empty pesticide containers and other pesticide-related waste as well as disposal of unwanted, unusable or obsolete stocks of pesticides, in order to prevent harmful consequences for human health and the environment. A pesticide law should follow international guidelines for disposal of empty pesticide containers, related waste and unused or obsolete pesticide stocks.

2. Recovering energy from biomass waste

51. The use of agricultural residues as a source of material and energy can offer developing countries the twin benefits of proper management of their waste and generation of renewable energy and materials. Additionally, biomass is an indigenous energy source available in most countries — one that can enable diversification and enable a more secure fuel supply in many situations. Apart from its extraction from direct sources, huge amounts of biomass are generated as by-products of agricultural (and wood) harvesting and processing activity.

52. To promote the use of biomass waste as a source of energy, Governments should frame and implement cross-cutting policies that underscore the importance and potential of biomass waste as a source of energy, and establish suitable financing schemes to provide funds for implementing waste-to-energy technologies. Governments, with the assistance of development partners, should develop capacity-building programmes on actions related to various aspects of waste agricultural biomass, including assessing of quantity and characterization, assessing appropriate technologies, selecting and implementing technologies, and developing a business case for converting waste agricultural biomass into an energy source.

3. Utilizing biomass waste for soil quality enhancement

53. Biomass produced as a by-product of cropping systems is often disposed of by burning or landfilling. In some sectors, such as organic agriculture, use of such material for soil improvement has been widely practised for many years, and the practice is increasingly being taken up by mainstream farmers. In conservation agriculture, instead of crop residue's being burned after the harvest, or biomass's being ploughed into the ground, they are left in place as soil cover. Besides reducing mineralization, erosion and water loss, the surface cover inhibits the germination of weeds, protects soil microorganisms and helps build up the supply of organic matter. As a result, less time and labour are spent on land preparation, and there is lower fuel consumption and less air pollution, reduced need for chemical inputs, and an increase in yields and farm income. Recent studies estimate that conservation agriculture is practised on about 100 million hectares of farmland, mainly in North and South America, but also increasingly in Africa and Asia. Developing countries, in particular, should use biomass as a low-cost alternative for soil quality enhancement.

54. Composting is another affordable technology which enhances the suitability of raw organic materials such as crop residues and animal waste for application to the soil as a fertilizing resource. Compost is a rich source of organic matter. Soil organic matter plays an important role in sustaining soil fertility and ensuring sustainable agricultural production. In addition to being a source of plant nutrients, it improves the physicochemical and biological properties of the soil.

III. Strengthening an enabling environment for implementation

A. Providing capacity-building and technology transfer for effective waste management

55. Capacity-building at all levels is a key success factor in the strengthening of the enabling environment for implementation of the reduce, reuse and recycle (3R) strategy, waste prevention and waste management projects and programmes, including successful technology transfer. If they are to achieve environmentally sound management and minimization of wastes in a sustainable and effective manner, programmes must go beyond purely technical considerations to the formulation of specific objectives and implementation of appropriate measures designed to address political, institutional, social, financial, economic and technical factors.

56. Experience shows that integrated approaches linking awareness-raising, training, promotion of enabling framework conditions and policies, and, when appropriate, technology transfer are effective in creating local capacity for waste prevention and management. The establishment of systems for quantifying, monitoring and disseminating results is crucial to ensuring sustainability and replication. Private sector involvement in waste management systems requires a shift in the role of government institutions from service provision to regulation, which may require the development of new institutional capacities (including competitive bidding, technical and organizational capacity, regulatory instruments and monitoring and control systems) to ensure that the conditions necessary for successful private sector involvement are in place.

57. A key success factor is the establishment of institutional mechanisms that facilitate cooperation across traditional institutional structures in ways that stimulate increased waste prevention. Multilevel national/regional/local government partnerships are useful in ensuring that waste prevention activities at various levels are mutually reinforcing. Government and municipal efforts in the area of waste prevention can be promoted through seeking the perspectives of stakeholders (for example, by securing their input during target-setting, instrument choice and application, and performance evaluation).

58. Successful technology transfer involves not only the selection and shipping of equipment, but also the adaptation of that equipment to local circumstances, the training of local technicians, and the long-term upkeep and use of the equipment, and thus requires both capacity-building and the promotion of an enabling environment for technology uptake, development and diffusion. The successful transfer of environmentally sound technologies requires recipient countries to have the requisite institutional resources and competencies (see box VIII). If these are not in place, then projects need to incorporate strategies to address the issue, for example, through capacity-building measures or activities aimed at improving access to resources. Existing market conditions and market forces need to be considered in the design of technology transfer projects; and barriers need to be identified and addressed, for example, through the creation of policy instruments, awareness-raising or other measures.

59. Technology transfer should help strengthen research and development systems and promote the capacity to develop new technologies and solutions. Availability of accurate, timely and authoritative information — including explicit information on government policies, cost and performance of new technologies, opportunities for international support, and the long-term implications of the introduction of the necessary technological change — is critical to project success. Effective strategies include developing niche research areas, particularly in institutions with limited funding, as well as creating research centres and strengthening research infrastructure.

Box VIII

Transfer of environmentally sound technologies for cleaner management of municipal solid waste in Havana City

The main emphasis of this project was to enable ministerial, provincial and municipal staff to design and implement municipal solid waste strategies that suited the needs of the country and were in accordance with the requirements of ecologically sound natural resources management. The project aim was to improve the capability of the targeted region in the area of municipal solid waste management through capacity-building at municipal, provincial and central levels. This was achieved, on the one hand, through theoretical training and on the other, through the practical experience acquired implementing selected demonstration projects. The project was based on an integrated approach including awareness-raising, local capacity-building and training, transfer of environmentally sound technologies and transfer of know-how. A central part of the project was capacity-building of all persons involved.

Key project results included the establishment of an integrated system for separate collection of different municipal waste streams and subsequent management (including a laboratory for waste analysis, a biogas plant and compost production). Furthermore, Cuba's Ministry of Economy and Planning has instructed other municipalities to examine the means of effecting the introduction and application of separate collection of municipal solid waste in their municipalities, while adjusting their activities to local conditions using locally available resources.

Source: Project implemented by the United Nations Industrial Development Organization and the National Cleaner Production Centre, Cuba, with financial support from the State Secretariat for Economic Affairs, Switzerland (project duration: 2005-2009).

B. Financing and investing in sustainable waste management

60. Waste management costs are increasing. Developing countries spend 60 to 70 per cent of their waste budget on collection, with complete municipal solid waste-related services consuming 1 to 2 per cent of a country's GDP. In developed regions, the cost of waste segregation ranges from \$107 per ton for mixed collection to \$1,320 per ton for segregated collection. The capital cost of incinerators may range from \$100,000 to \$200,000 per daily metric ton of capacity, compelling the owner to invest at least from \$30 million to \$600 million initially. The annual cost per metric ton of waste burned amounts to \$30 on average. The additional cost of treatment of residual ash in a special landfill can range from \$200 to \$500 per metric ton. In a typical city with a population of 50,000, the costs of landfilling and incineration are \$95 and \$147, respectively.

61. Government investments in waste management services have increased over recent years. Energy recovery projects have been the recent focus of Government investments in developed countries. The United Kingdom has allocated US\$ 16.5 million for anaerobic waste-to-energy projects. China is planning to allocate 862.9 billion renminbi (US\$ 126 billion) to promote provision and construction of municipal solid waste management infrastructure.

62. Government funding has often been insufficient, however, in respect of meeting the growing demand for waste management services in both developed and developing countries. Through private participation, many investment barriers have been addressed successfully based on flexible financing options. The growing number of waste-related private finance initiatives in the United Kingdom reflects the emerging interest of the public sector in private involvement in the industry. Engaging the private sector has reduced the waste service cost by at least 25 per cent in countries such as the United Kingdom, the United States and Canada and by at least 20 per cent in Malaysia. Developing countries should create an environment that encourages the creation of public-private partnerships (see table).

Public-private partnership arrangements, Latin America, the Philippines and Dakar

<i>Location</i>	<i>Project details and benefits</i>
Latin America	• Higher labour and vehicle productivity, which has reduced the service cost by about 50 per cent
Philippines	• A privately built special high-temperature incinerator for infectious health-care wastes is being used by more than 200 medical centres and hospitals
Dakar	• A public-private joint venture initially monopolized the sector but later competitive privatization arrangements were introduced for multiple service contracts

63. Financing options such as microfinancing and hybrid financing have been successful in meeting project costs in several regions of the world. For example, the participatory sustainable waste management project established in 2006 in Brazil created microcredit funds through donations. These funds were used as a source of working capital for financing transportation and for emergencies. The funds were also used to extend loans for waste-pickers, who repaid their loans after receipt of payment from recycling depots.

64. In another example, microfinancing has been provided to microenterprises managing a 40-year-old garbage heap of 2 million metric ton capacity (known as Smokey Mountain) in Metro Manila. The microenterprises are involved in the collection, sorting and sale of waste through a material recycling facility. Microfinancing enabled those enterprises to secure loans and increase their capacity to generate revenue.

65. Hybrid financing models are being increasingly explored to rekindle and/or close economically challenged waste management projects. In the United Kingdom in 2003, the Government introduced an innovative financing option called prudential borrowing. The Government Department of Environmental, Food and Rural Affairs recommends applying the option for low-risk investments, for example, in recycling centres and land acquisition. In one case involving the West Sussex County Council, the low-risk component of a mechanical biological treatment process (representing about 60 per cent) was funded through prudential borrowing.

66. The Clean Development Mechanism (CDM), which was introduced under the Kyoto Protocol⁵ to the United Nations Framework Convention on Climate Change,⁶ helps to improve the financial viability of waste management projects and is a market mechanism that should be strengthened further. It is important to note, however, that the Clean Development Mechanism improves the internal rate of return of projects by a margin of only approximately 5 per cent; hence, identification of other sources of financing is critical to the project.

⁵ United Nations, *Treaty Series*, vol. 2303, No. 30822.

⁶ *Ibid.*, vol. 1771, No. 30822.

C. Building partnerships

67. Various national Governments and international institutions have launched activities supporting capacity development in respect of policy frameworks, financing mechanisms (including public-private partnerships) and technology for waste management. However, efforts have thus far been scattered, uncoordinated and insufficient in terms of addressing the needs of developing countries. The complexity, costs and coordination required for effective waste management demand multi-stakeholder involvement at every stage of the waste stream process. There is a clear need to identify and engage all stakeholders in waste management and strengthen cooperation so that it is conducive to the creation of strong innovative partnerships at international, regional and local levels. These partnerships are needed particularly to strengthen cooperation in the areas of institutional and human capacity, research and information-sharing and technology transfer. They should also be actively engaged in advocacy, education and building awareness.

68. In this context, the United Nations Environment Programme (UNEP) proposes a global partnership on waste management designed to provide coordination, increase the exchange of best practices across countries and pool resources for the replication and scaling up of successful practices. The Department of Economic and Social Affairs of the United Nations Secretariat is also planning to launch an international partnership dedicated to addressing the needs of public waste utilities and municipalities and supporting local action plans and strategies for sustainable waste management.

IV. The way forward

69. The magnitude and gravity of the problem of adequate waste management have been amply highlighted at the eighteenth session of the Commission on Sustainable Development. The rapid increase in volumes and types of both solid and hazardous waste as a result of economic growth, urbanization and industrialization is becoming a major issue for national and local governments, particularly in developing countries, which are constrained in terms of both resources and capacity. The negative impacts on the health of surrounding communities, as well as on local environment, in terms of pollution of land, water and air, are becoming more acute. Ineffective and inefficient waste management results in greenhouse gas and toxic emissions and loss of precious materials and resources.

70. Waste management and resource recovery from waste are still low priorities of many countries, particularly developing countries, and national and local policies on waste management are not yet comprehensive enough to cover all types of wastes and all aspects of waste management. In many developed countries, policy frameworks designed to support resource recovery from waste remain inadequate.

71. The priority objectives in the field of policy options for waste management are to formulate and implement policies that promote waste prevention and minimization and support effective and efficient management of the remaining solid and hazardous wastes, focusing on reuse and recycling and on the recovery of useful materials and energy. Countries need to set time-bound targets, especially regarding

aspects like minimization and segregation, recycling and recovery, collection efficiency, treatment and environmentally sound disposal.

72. An important step should be to improve the quality and reliability of waste-related data so that the problem can be defined accurately. The data should include not only the current amount of different types of waste generated, but also the expected future amounts, in order to develop projections that will allow adequate planning for resource recovery and substitution of virgin materials. Governments may wish to create "waste cells" charged with the responsibility of collection, refinement and updating of waste data from all sources of waste generation and establishing a process of aggregation from local- to national-level data.

73. In addition to policy development and implementation, waste management systems require technology and financing to build required infrastructure. Countries need to launch intensive capacity-building programmes so as to enable concerned personnel to select, implement and operate the required technologies. Capacity of research and development institutions needs to be enhanced to enable them to undertake development and adaptation of technologies to suit local conditions; the role of international organizations in capacity-building and enhancing access to technology is crucial; and the availability of financial resources for building waste management infrastructure in developing countries needs to be enhanced. There is also a need to develop and implement innovative financial instruments for raising funds for waste management. Public-private partnerships could be further explored as a means to increase availability of and access to financial resources.

74. The social dimensions of waste management cannot be overlooked. An important aspect in this regard within the context of developing countries is the role and status of scavengers and ragpickers. Programmes need to be developed to mainstream this section of society into modernized, safe and environmentally sound waste management systems where they can earn a decent income.

75. Special attention needs to be paid to specific waste streams including e-waste, waste plastics, waste agricultural biomass, health-care wastes, industrial hazardous wastes and radioactive wastes.

76. Effective implementation of waste-related multilateral agreements and guidelines is needed at the national level. Corresponding laws, regulations and standards need to be developed and their enforcement needs to be strengthened at both the national and local levels. Economic incentives for waste minimization and recycling need to be more extensively employed.

77. Finally, it is increasingly being realized that issues related to waste management can best be tackled by promoting partnerships among and between different Governments, the private sector, development partners and other stakeholders.

78. In the future, waste has to be valued as a resource and waste management needs to be carried out with a life cycle perspective. This would go hand in hand with an increasing application by Governments of the principle of extended producer responsibility, and use of economic instruments and other sustainable consumption and production policy instruments, particularly in developed countries.

79. On the whole, these efforts would contribute to sustainable development, with the associated benefits of improved public health, poverty alleviation, creation of decent jobs, improvements in living standards, reduction of greenhouse gas emissions and other pollutants, and extension of the life of resources.



**Economic and Social Council**

Distr.: General
16 December 2010

Original: English

Commission on Sustainable Development**Nineteenth session**

2-13 May 2011

Item 3 of the provisional agenda*

Thematic cluster for the implementation cycle

2010-2011 — policy session

**Policy options and actions for expediting progress in
implementation: mining****Report of the Secretary-General***Summary*

A number of significant changes have taken place in the mining sector since the World Summit on Sustainable Development in 2002. Progress has been achieved on transparency and governance of the sector. Many companies have embraced progressive voluntary guidelines and principles as a framework for their operations, while pursuing resource efficiency improvements. However, significant gaps remain. Many countries could enhance the contribution of their mineral wealth to their national economies. Steps remain to be taken towards increased transparency and disclosure from governments to citizens on mining activities and the revenues they generate. Respect of human rights, land rights and livelihoods of local and indigenous communities, environmental and social impacts of mining activities, and more generally relations among governments, companies and citizens are areas where further progress is needed. In all this, addressing inadequate capacity in national governments is critical. The international community can help countries make the most of their mineral wealth through technical cooperation, the exchange of good practices, and the pursuit of initiatives on transparency.

* E/CN.17/2011/1.



Contents

	Page
I. Introduction	3
II. Controlling the need for metals and minerals extraction	3
III. Strengthening the contribution of mining to national economies	6
A. Large-scale mining	6
B. Artisanal and small-scale mining	8
IV. Addressing the environmental and social impacts of mining	10
A. Environmental impacts	10
B. Social impacts	12
V. Improving governance in the mining sector	14
A. Continuing to progress on international governance	14
B. Fostering improved performance by the mining industry	16
C. Improving national governance	17
VI. Building and reinforcing national capacities	19
VII. The way forward	20

I. Introduction

1. At its eighteenth session, the review session of the fourth implementation cycle, 2010-2011, the Commission on Sustainable Development conducted an evaluation of progress achieved in the selected cluster of issues of mining, transport, waste, chemicals and sustainable consumption and production, as described in Agenda 21, the Programme for the Further Implementation of Agenda 21 and the Johannesburg Plan of Implementation.¹ The Commission identified constraints and obstacles, as well as new challenges and opportunities, with regard to implementation in the selected thematic cluster.

2. At its nineteenth session, the policy session of the current implementation cycle, the Commission will take decisions on policy options and practical measures to expedite implementation in the selected cluster of issues. The session will be preceded by an Intergovernmental Preparatory Meeting, at which a draft negotiating document will be prepared for consideration by the Commission.

3. The present report is a contribution to the discussion to be held at the Intergovernmental Preparatory Meeting on issues related to mining. The report benefited from inputs received from the United Nations Environment Programme (UNEP), the United Nations Industrial Development Organization and the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development.

4. For the purposes of this report, mining is defined as the economic activity dedicated to the production of minerals and metals, including exploration, extraction and processing of the minerals. Oil and gas are excluded from the scope of the report, having been considered by the Commission on Sustainable Development during its fourteenth and fifteenth sessions under the theme of "energy".

II. Controlling the need for metals and minerals extraction

5. Worldwide consumption of mined commodities has increased steadily in recent years, a trend that is expected to continue, as a result of strong demand in fast-growing developing countries. Although material intensities have declined in countries of the Organization for Economic Cooperation and Development (OECD) – more economic value is being created using relatively less material inputs – the overall (absolute) use of raw materials is not declining.²

6. At the same time, the extraction and processing of minerals imposes environmental and social costs. Several factors contribute to the environmental and social impacts of mining. With regard to the extraction of industrial minerals and metals, the first one is the "size" of mining as an economic activity, which relates to the demand for minerals and metals as inputs in the production system. The second one is the environmental impacts of specific extraction techniques, and more broadly the way extractive projects are managed on the ground.

7. Regarding the former, the link between industrial metals and minerals extraction and the demand for industrial metals and minerals as inputs to the

¹ See E/2010/29-E/CN.17/2010.15.

² See *OECD Environmental Outlook to 2030* (Paris, 2008).

production process is affected by: (a) the extent of recycling that takes place; (b) material efficiency, that is, the quantity of metals needed to produce one unit of product; and (c) material substitutions in the production process, whereby metals are replaced by other components. Efforts to reduce adverse impacts of mining should contemplate actions on these three fronts, in particular within the context of actions taken to achieve more sustainable production and consumption patterns. The promotion of recycling activities can also create or sustain employment, as those activities are labour-intensive, especially in developing countries.

8. By contrast, the demand for diamonds and gemstones, and to some extent gold, is largely determined by individual consumers. Given this link and the large environmental and social impacts of extracting artisanal gold and diamond mining overall, a number of proposals have been made by non-governmental organizations (NGOs) and other stakeholders to:

- (a) Limit the end demand for these mineral products by directly addressing consumers and alerting them on the impacts of mining;
- (b) Rationalize the use of existing stocks above ground by discouraging stockpiling and encouraging recycling;
- (c) Promote third-party certification schemes that address the environmental and social issues associated with the mining of gold and precious stones.

9. At the macroeconomic level, prices of minerals and metals do not fully reflect the life cycle of environmental and social costs of mining activities. This results in socially inefficiently high use of metals and minerals in the production system and high environmental and social impacts, as well as in low incentives for mining companies to adopt cleaner production systems. The fact that some environmental and social costs are not incurred by producing firms also affects the incentives to recycle, through the relative costs of production of recycled and virgin raw metals.

10. A first area for consideration is whether the component of mineral prices that relates to royalties and other taxes paid by extracting companies reflects a fair compensation to the countries in which minerals are extracted for the loss of their natural assets. If this loss is not adequately compensated, prices are too low, and minerals extraction effectively becomes a transfer of wealth from producing countries to users of the extracted minerals. A second area for consideration is to examine direct and implicit subsidies to mining resulting from the tax and investment regimes applying to the industry, with a view to ensuring that those subsidies effectively contribute to sustainable development goals.

11. Options to better reflect externalities created by mining activities in the production costs faced by firms can be grouped into three broad areas: enacting and enforcing environmental and social regulations; devising legal and financial provisions for mine closure and rehabilitation; and devising measures to cover the environmental and social costs of accidents, such as leakages, overspill of containment ponds and failure of tailing dams. Clear liability provisions and mandatory mine closure and monitoring plans help ensure that the cost of operation more fully reflects the impacts of mining activities. One option for funding rehabilitation activities on abandoned sites is the imposition of levies on the mining industry. For instance, in the United States of America, the Surface Mining Control and Reclamation Act of 1977 established an Abandoned Mine Land Fund, which is

financed from levies on coal extraction, to pay for the clean-up of abandoned surface coal mines.

12. In many low-income countries, the recycling of metals is already at high levels, often based on hand sorting. Some countries have implemented differentiated sectoral policies that have an impact on the reuse and recycling of metals (for example, the directives on restriction of hazardous substances and on waste electrical and electronic equipment adopted by the European Union). Extended producer responsibility requirements, such as the end of life vehicles directive adopted by the European Union have also altered the behaviour of manufacturers and created post-consumer recycling systems that operate separately from the broader scrap market.

13. At the national level, promoting or mandating greater use of design for reuse and recycling in sectors that currently use a significant portion of minerals and metals produced, for example automobiles, buildings and infrastructure, can be achieved in different ways, through adequate provisions in building codes, third-party certification systems and public procurement. Governments can also encourage the private and public sectors to use the full potential of industrial ecology, where waste from parts of the industrial system are used as inputs by other industrial activities, by supporting the creation of decentralized waste markets (for example, through electronic platforms).

14. Many countries have used proactive measures to further increase reuse and recycle minerals and metals. These include:

- (a) Production of geographically referenced inventories for the main metals, accounting for the current stocks embedded in infrastructure, buildings, landfills, household equipment and other sources;
- (b) Development of curricula targeting the creation of specialized experts and contractors in metals and minerals reuse and recycling activities;
- (c) Conduct of economic and feasibility studies for developing recycling systems infrastructure, including collection points and sorting and processing facilities;
- (d) Keeping high-value recyclables out of landfills by banning land-filling of end of life vehicles, domestic appliances, electronics and other high-metal content goods;
- (e) Requiring, when appropriate, separation of valuable recyclables and processing by shredding, and encouraging the setting up of shredding and segregation plants at landfills;
- (f) Ensuring that local policies and regulations support and promote reuse and recycle activities in specific sectors, for example, buildings and construction;
- (g) Incorporating reuse and recycling language in requests for proposals and other public contract specifications.

III. Strengthening the contribution of mining to national economies

15. As recorded in the summary by the Chair of the discussions of the Commission at its eighteenth session, there is a need to root the mining sector in the long-term development imperatives of national economies and to create linkages with these economies to reinforce the sector's contribution to sustainable development. Maximizing the contribution of mineral wealth to the national economy involves a number of stages and involves no uniform recipe; instead, choices adapted to countries' specific circumstances have to be made regarding each stage of the process.

A. Large-scale mining

16. In many countries, substantial mineral reserves remain underexplored or underexploited. Reasons for this include lack of data and information, lack of investment in the sector and lack of infrastructure needed for the development of major projects. A necessary first step is the development of adequate knowledge bases for different types of mineral resources that countries may have through surveying and mapping.

17. At the stage of allocation of exploration and exploitation rights, the country's interest is to get the best possible price for the mineral wealth that will be extracted. As demonstrated in several countries, it is possible to clearly separate exploration rights from exploitation rights, with the objective of ensuring competition for exploitation rights among several companies. The asymmetry of information that often exists between authorities in charge of allocating mining rights and companies, with the latter being better informed about the real amount and value of mineral deposits, may be overcome by using open bidding, since companies compete for deposits based on similar technical capacities. Open bidding has recently been chosen as the process for re-allocating expired concession rights in several African countries.

18. The share of the extracted wealth accruing to the State depends on factors such as the legal and regulatory framework applying to mining (for example, mining codes); the flexibility mechanisms built-in investment contracts to deal with fluctuations in mineral prices; taxation and royalty regimes; provisions for royalty calculation and collection; and local economic content provisions, such as shared equity or targets for local employment content within and around the mining project. Countries have applied a range of tax and royalty schemes for the mining industry. In practice, the actual collection of revenues is affected by a number of factors.³ In a number of cases, governments are shareholders in mining ventures, for example, diamond miner Debswana (50 per cent owned by the Government of Botswana) and Williamson Diamonds (25 per cent owned by the Government of the United Republic of Tanzania).

³ It is estimated that between 1990-2001 the Chilean State-owned miner Codelco paid \$10,659 million in taxes, while the private companies paid \$1,638 million, despite their share of production being 25 per cent greater.

Source: Elva Bova, "The implications of mine ownership for the management of the boom: a comparative analysis of Zambia and Chile", Working Paper No. 2009/13, Swiss National Centre for Competence in Research.

19. Beyond employment and other direct economic impacts of mining operations, creating linkages between mining and the rest of the economies is critical for development. Without an integrated approach, there are real risks that mining operations operate as enclaves, with few spillovers to the rest of the economy. An approach used in Mozambique, Liberia and other countries is that of growth or development corridors, where planned mining development is integrated within broader spatial planning that aims to develop locally suited economic activities (such as agriculture, forestry, small-scale mining) by taking full advantage of the infrastructure created specifically for the needs of mining projects. For example, roads, railway lines, electricity generation facilities and port facilities can be built with additional capacity to allow other activities to use them or communities to benefit from them. Lessons learned from experience show that the best way to configure such links is before mining contracts are signed. Provisions relating to over-dimensioning of infrastructure can be added in concession bids, with companies competing on this dimension.

20. Managing the revenues from mining for maximal development impact is the next critical step. Countries endowed with natural resources have an interest in devising sound macroeconomic and institutional frameworks to manage the rents and other revenues from these resources. In the domain of mining activities, relevant areas of concern relate to: (a) avoiding the "Dutch disease"; (b) using revenues to stabilize the economy; and (c) using the revenues for maximum development impact.

21. Risks of Dutch disease are now well understood, and a number of countries have taken measures to prevent it. In some countries, such as Botswana, Chile and Norway, the totality or a portion of the revenues from minerals is set aside in special funds, the uses of which are defined by law. Depending on a country's priorities and economy, the following strategies may be effective, alone or in combination with one another: investments in education and infrastructure to increase the long-term competitiveness of the manufacturing sector; isolation of a part of the revenues from mining from the rest of the economy and invest them abroad; and setting aside some part of the revenues for future generations. Revenues from minerals (or the windfall part of them) can also provide reserves that can be used in countercyclical ways to limit the impacts of external shocks on national economies.

22. In many countries, lack of absorptive capacity of the economy has been identified as a major obstacle to a more sustainable use of revenues from minerals. Lack of capacity to spend by regional governments has been identified in Peru and is reflected in low execution rates of budgets related to the Canon Minero.⁴ Local community priorities and government investment priorities are sometimes in tension. Inconsistency between national development plans and actual investments is a general concern. This results in some of the investments undertaken being either not useful or redundant. Improved information-sharing and cooperation between sectors and levels of government can help overcome these inconsistencies.⁵

⁴ Propuesta Ciudadana, "Vigilancia de las industrias extractivas", Reporte Nacional No. 5 — Balance 2004-2006 (Lima, Perú, June 2007).

⁵ United Nations Department of Economic and Social Affairs, "Using non-renewable resource revenues for sustainable local development", *Sustainable Development Innovation Briefs*, Issue 6 (New York, 2008).

23. Better addressing the environmental and social costs of extractive activities in host communities remains a critical challenge. Experts agree that in many countries, the compensations to host communities are insufficient to address local depletion of environmental assets and other social impacts of projects. In order to make a difference to development outcomes, revenues from natural resources need to be able to generate additional and sustainable incomes, beginning with replacing income sources or opportunities that have been destroyed by the mining activities, such as farming and fishing. Projects which create links between mineral extraction and the local economy are very important in that context.⁶

B. Artisanal and small-scale mining

24. It is widely recognized that the development of artisanal and small-scale mining is largely a product of poverty and lack of viable alternative livelihoods. Many issues related to artisanal and small-scale mining directly relate to its lack of status as a legitimate economic activity. Artisanal and small-scale mining often operates at the margin of or outside legality, with legal and regulatory framework for mining focusing largely on large-scale mining. Artisanal and small-scale mining activities are often not integrated into national development plans and recognized as a source of livelihoods for the local populations who rely on them. When they exist, official zonings of land allowed for artisanal and small-scale mining activities do not always correspond to where activities already take place or where they make economic sense. As a result, several issues are commonly related to artisanal and small-scale mining across the world, linked respectively with land rights disputes, adverse social and environmental impacts, and illegal markets.

25. Past international experience shows that attempts at integrating artisanal and small-scale mining into the formal economy should pay special attention to the economics of various mining activities in their local context. This comprises both upstream supply chains (for example, for inputs, legal or illegal) and downstream supply chains, from local sellers to intermediaries and end buyers. Actions focusing on miners alone have been shown to have limited success in reducing the use of illegal inputs, breaking cycles of indebtedness, reducing the monopoly power of buyers or limiting parallel trade.

26. Efforts to formalize the artisanal mining sector and integrate it into the formal economy should be based on lessons learned during the past decades. Actions that have been suggested by field research and policy research include:

- (a) Enhancing national information and monitoring systems relating to small-scale mining, including areas affected; regular surveys of the health, income, livelihoods and economic conditions of concerned populations;

- (b) Integrating artisanal and small-scale mining into broader local development strategies and poverty reduction policies in order to maximize the contribution of such activities to livelihoods, facilitate the cohabitation of mining activities with other sources of livelihoods, and, when appropriate, provide credible and viable alternative livelihoods to mining activities;

⁶ Ibid.

(c) Building the legal and regulatory framework for artisanal and small-scale mining in a way that both recognizes its contributions to livelihood and tries to maximize its social benefits through legal recognition of small-scale mining activities; adequate zoning of land suited for artisanal and small-scale mining activities; facilitation of registration for miners; and provision of technical support to small mining communities;

(d) Recognizing land rights of communities and clarifying whether they are allowed to mine land that they consider theirs, and allocating exploration and production rights fairly among large- and small-scale mining;

(e) Putting in place appropriate institutions and frameworks for consultation at the local level in order to prevent and manage conflicts that can arise between small-scale mining and local activities which mining can affect negatively, especially agricultural activities.

27. Governments need to guide the development of artisanal and small-scale mining and create a sound environment for its operations. In some contexts, the expertise of the private sector can be used advantageously. There are examples of cooperation between large-scale mining companies and small-scale operations, where large-scale companies provide technical support and capacity-building. Governments can also reinforce the capacity of mining, as well as labour and environmental agencies, to enforce laws and regulations applying to mining operations in matters of child labour, labour safety, health safety, use of hazardous materials and environmental impacts, and provide these agencies with adequate resources to discharge these tasks in the specific context of artisanal and small-scale mining, including capacity-building for local mining communities. Other important domains where governments can play a role are the provision of adequate education, health facilities, security and access to basic services to the broader mining communities, with special attention to the situation of women, and devising policies to specifically address health and gender issues in mining communities, including HIV/AIDS and work-related health issues.

28. Among the most important environmental issues related to small-scale mining are the use of mercury for gold amalgamation, sometimes in combination with cyanide. International discussions on mercury are ongoing. With support from international institutions, governments should provide assistance to artisanal and small-scale mining operators to improve technologies and limit the adverse impacts of the use of mercury and cyanide, taking account of lessons learned through past initiatives, including:

(a) Designing comprehensive pollution abatement strategies that explicitly address local socio-economic capacities for improving environmental management;

(b) Proposing economical alternative techniques to the traditional use of mercury;

(c) Adapting technical solutions to local values or materials and designing the implementation of technical facilities (such as centralized mercury mills for gold amalgamation) with proper consideration of local demand and the local dynamics of the mining communities.

IV. Addressing the environmental and social impacts of mining

29. Environmental and social impacts associated with mining vary widely, depending on the type, scale and location of the activity. Since the World Summit on Sustainable Development, a number of good practices have been developed and shared, including on: good governance and sustainable mining principles; resource efficiency in extraction; mine safety and health; management of tailings and waste rocks; and rehabilitation of abandoned and orphaned mines.

30. Owing to the vulnerabilities of small island developing States, stemming in part from their limited carrying capacity and high dependency on marine and coastal resources, the carryover effects of mining to other sectors are particularly significant for this group of countries. Integrated approaches are needed that address mining together with fisheries, biodiversity, energy and shipping.

31. The existence and enforcement of appropriate mining and environmental laws and legislation is critical to addressing the environmental impacts of mining. Regulations should be adapted to the category of the mining operation (large- and small-scale mining). There is broad agreement that this should include the preparation of comprehensive environmental and social impact assessments, with the meaningful participation of the local stakeholder and community.

32. As mining operations continue to expand outside traditional mining countries, a key challenge is to ensure that industry best practices are disseminated and adopted as widely as possible. In parallel to the adoption of appropriate environmental and social laws and regulations, the implementation of voluntary standards and codes of conduct can potentially also raise the environmental and social performance of mining companies wherever they operate. Reporting, for instance through the adoption by firms of the Global Reporting Initiative's Mining and Metals Sector Supplement, can also contribute to an improvement.

A. Environmental impacts

33. Mining operations may have a range of environmental impacts, including land degradation, water pollution, air pollution and destruction of natural habitat. While some impacts are unavoidable once mining operations begin, damaging impacts can be minimized through the use of environmental impacts assessment, use of appropriate mining technologies, adherence to best practices in ongoing operations and careful post-closure management and monitoring.

34. The prevention and management of pollution from mines is usually covered in legislation. For example, the European Union's mining waste directive covers the management of waste from the mining industry. The Directive provides that operators must prevent water pollution, make available financial guarantees for restoring sites, and imposes duties to maintain and monitor disused sites.

35. Mining has implications for water consumption and water quality. Water use in mining is essential in all mining categories, ranging from hard rock, sand and gravel mining, to industrial mineral mining and coal mining. A strong focus on water management is needed to ensure that water is used efficiently and that discharges are managed. At the facility level, there should be site-specific pollution prevention plans supported by ground- and surface water monitoring. There is also greater

scope for the adoption of water conservation and efficiency and water recycling measures at many mining operations.

36. A major environmental problem relating to mining in many parts of the world is uncontrolled discharge of contaminated water from abandoned mines. Acid mine drainage is not only associated with surface and groundwater pollution, but it is also responsible for the degradation of soil quality, aquatic habitats and for allowing heavy metals to seep into the environment. Options available to limit acid mine drainage include prevention of direct contact of water with surface waste rock, through sealing with impermeable soil (clay) or plastic covers. One example of an innovative initiative to address acid mine contaminated water is the Emalahleni Water Reclamation Project, which is a public-private partnership jointly undertaken by Anglo Coal (South Africa), BHP Billiton Energy Coal South Africa, and the Emalahleni local municipality. The plant desalinates rising underground water from collieries, preventing polluted mine water from decanting into the environment and the local river system, augmenting the water supply of the local government.⁷ So-called passive mine water treatment facilities relying mostly on enhanced natural attenuation have been promoted by UNEP in the Western Balkans at abandoned mining sites with limited but continuous discharges of acid mine drainage.

37. Cyanide, which is acutely toxic to humans, is used in the mining industry to extract gold and silver from ore. An initiative to improve the management and use of cyanide is the International Cyanide Management Code, a voluntary programme for gold mining companies, cyanide producers and transporters, which focuses on the safe management of cyanide and cyanidation in vats or tanks. The Code was developed by a multi-stakeholder steering committee under the guidance of UNEP and the then International Council on Metals and the Environment, now the International Council on Mining and Minerals.

38. The disposal of tailings from mining has been a pervasive cause of environmental damage. Riverine tailings disposal has been criticized as a source of destruction of ecosystems and pollution of water sources. Submarine tailings disposal is banned under the Clean Water Act in the United States, but is used in a number of countries. Tailings dams typically represent a significant environmental liability associated with mining operations. The failure of such impoundments represents serious risks to the environment and human health, and involves very costly clean-up operations. Many jurisdictions have developed standards and guidelines for the operation of tailings dams and facilities, focusing increasingly on a risk management approach. The International Commission on Large Dams has also developed guidelines for tailings dams.

39. Mine closure and rehabilitation activities need to be planned from the inception of and undertaken throughout the operation of a mine. Mandatory insurance requirements or mitigation fees for mining companies may help reduce environmental risk exposure for governments. In this regard, many jurisdictions now require companies to provide guarantees or establish funds for mine closure, also referred to as reclamation funds prior to a mine opening.⁸ For example, in

⁷ See World Coal Institute case study, available from <http://www.worldcoal.org/resources/case-studies/emalahleni-water-reclamation-plant/>.

⁸ Wanda M. A. Hoskin, "Mine Closure — The 21st Century Approach: Avoiding Future Abandoned Mines", Centre for Energy, Petroleum and Mineral Law and Policy Internet Journal Vol. 12: Article 10 (available from <http://www.dundee.ac.uk/cepmlp/journal/html/vol12/article12-10.html>).

South Africa, the Mineral and Petroleum Resources Development Act 28 of 2002 provides that a company must establish a financial provision, usually in the form of a rehabilitation fund or bank guarantees, before the mandatory environmental management plan can be approved. When individual insurance is not feasible, mitigation fees financing an insurance pool could be an alternative to limit public risk exposure.

40. In many countries the legacy of abandoned or partially rehabilitated mines is a significant issue. In many cases governments are saddled with the cost of remediation and rehabilitation. A key problem is that in most countries, existing legislation does not address this issue. As a consequence, there is a lack of established procedures for remediation, and potential legal liabilities discourage companies that may wish to work on the site from doing so. Along with clear liability provisions, mandatory mine closure and monitoring plans may help limit this risk. An essential first step is the identification, assessment and inventorying of sites, in order, including prioritization in accordance with risk levels, in a transparent process with stakeholder involvement.

41. Uranium mining gives rise to radioactive waste from all stages of mining and milling processes and includes, in addition to mill tailings, waste rock, mineralized waste rock and process water, including leaching solutions. Mining and milling remove potentially hazardous constituents in the ore and convert them into forms such as sand and sludge, which are more susceptible to dispersion in the environment. Particular attention to airborne dust and groundwater pollution is required, especially when communities are sited close to active or closed mining sites. In this regard, abandoned mine sites represent a particular problem and should be prioritized accordingly for remediation.

42. Establishing and enforcing clear rules for biodiversity protection in relation to mining, including appropriate zoning of areas where mining activities are permitted, remains elusive in many countries. Although global and national policy debates often centre on "no go" areas on land that is already subject to legal protection, mining in important ecosystems that are not adequately protected may pose an even greater threat. NGOs have developed general principles and criteria for identifying areas that should be off-limits to mining, oil and gas development. However, they are not always implemented.

B. Social impacts

43. There have been increased calls from civil society, and more recently from institutional investors, for mining companies to respect human rights instruments, the International Labour Organization (ILO) Convention concerning Indigenous and Tribal Peoples in Independent Countries (Convention No. 169) and other ILO conventions, as well as other instruments, such as the United Nations Declaration on the Rights of Indigenous Peoples. There has also been a focus on the need to apply the principle of free, prior and informed consent, as the absence of (or merely pro forma) consultation with local and indigenous communities on decisions to start and operate mining activities has remained a pervasive issue and has been a source of conflicts. Lack of information for local populations on mining projects is also a crucial gap. Among the complaints received by the International Finance Corporation regarding mining projects that they finance, the most frequent causes

for the complaints are: (i) absence of information on the project, (ii) land issues, and (iii) water issues.⁹

44. Displacement arising from mining operations may result in serious social problems, including marginalization, food insecurity, loss of access to common resources and public services, and social breakdown. In this context, decision-making, including issuance of prospecting licences, should be transparent, and local stakeholders should have the right to be heard.

45. Permanent consultation between companies and local communities during operations is recognized as best practice. Putting in place adequate and effective mechanisms to do so has often been a challenge. The Minerals Council of Australia, in partnership with the University of Queensland, is developing a postgraduate programme aimed at improving the skills of community relations practitioners in the minerals industry, specifically in community engagement, community development, corporate social responsibility and cultural awareness.

46. Women provide up to 50 per cent of the small-scale mining workforce, but their compensation typically lags behind that of male mine workers. Women in communities affected by mining also tend to bear most of the down sides of mining activities. This strongly suggests that a gender-sensitive approach to mining projects should be followed in social evaluations and social projects centred on host communities. Work by the World Bank provides recommendations in this regard, as well as a list of indicators that can be used to monitor this dimension in mining projects.¹⁰

47. A large number of children work in artisanal and small-scale mining. The call by ILO in 2005 for action against child labour in small-scale mining advocated for immediate steps to withdraw children from mines and their immediate surroundings. Experience from a pilot project in Peru under the ILO International Programme on the Elimination of Child Labour demonstrated that a number of steps could be applied to remove children from artisanal and small-scale mining. These include sensitization at the national and regional levels among decision makers, access to improved technology that eliminates the need for child labour, and improvements in basic services.

48. Improving the health and safety of mine workers remains a challenge across the world. To date, 23 countries have ratified the ILO Convention concerning Safety and Health in Mines (Convention No. 176). Given that this Convention provides a framework to achieve continuous and sustainable occupational safety and health improvements, its ratification could improve laws and regulations in those countries where mine safety is weak and where no coherent occupational safety and health policy exists for the sector. It is also important that countries take steps to fairly compensate the long-term health impacts on workers and nearby communities. Improving working conditions in the artisanal and small-scale mining sector will

⁹ See communication by Meg Taylor, Vice President, Compliance Adviser/Ombudsman, International Finance Corporation, at the fifth Columbia International Investment Conference: "Extractive Industries and Sustainable Development: the Challenges of Implementation", held in New York, 27-28 October 2010.

¹⁰ *Mining for Equity: Gender Dimensions of the Extractive Industries*, Extractive Industries and Development series #8, World Bank (Washington, D.C., 2009).

remain a challenge, as it operates largely informally with minimum work safety and health standards.

49. The influx of persons associated with mining operations may also give rise to, or exacerbate, indirect negative social impacts, such as alcoholism, prostitution and sexually transmitted diseases, including HIV/AIDS. Social and health policy interventions are required by mining companies and local authorities.

50. The social side has been dubbed the “weakest pillar” of sustainability assessment by some experts. Social impact assessments are often mandated by law and regulation for all proposed mining projects. While the goal of such assessments is to identify and address potential social issues proactively, a number of weaknesses of this and related instruments have been identified. They include: insufficient scope; lack of comprehensive approach addressing all relevant issues; lack of integration of social, environmental and economic issues; an overly technocratic approach; and the static nature of these exercises. The demand for greater integration of social and environmental impact assessments is supported by the World Bank Extractive Industries Review, among others.

V. Improving governance in the mining sector

51. Mining activities generate a range of impacts that have been examined in the report of the Secretary-General to the Commission at its eighteenth session. Depending on the case, preventing, managing or mitigating those impacts requires adequate governance at both the national and international levels, including the rule of law, as well as ethical, accountable and transparent behaviour by governments and companies, within the respect for national sovereignty over the control of national resources, as stated in Principle 21 of the Stockholm Declaration and reaffirmed in 1992 by Principle 2 of the Rio Declaration on Environment and Development.¹¹

52. International governance issues arise because of the globalized nature of markets and value chains involving minerals and metals. Adequate governance should aim at greater transparency and accountability at all points of such supply chains, with the aim to support interactions among all the actors in ways that are conducive to sustainable development. A comprehensive approach to governance in the sector has to consider in particular the following aspects, which can be adequately addressed by a combination of national and international efforts: (a) trade in conflict minerals; (b) transparency of agreements between governments and the private sector; (c) respect by the mining industry of basic human rights, including the rights of affected communities; and (d) environmental and social performance of international companies.

A. Continuing to progress on international governance

53. Mining activities in countries suffering from conflict or where a serious risk of conflict exists have often been detrimental to sustainable development. So-called

¹¹ *Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992* (United Nations publication, Sales No. E.93.I.8 and corrigenda), vol. I: *Resolutions adopted by the Conference*, resolution I, annex II.

"conflict minerals" have been documented to stoke conflicts, increase crime and corruption, and hinder economic and social development. Under the appropriate forums, all countries should cooperate among themselves and with mining companies to end trade in conflict minerals. Options that can be considered include:

(a) Assessing the need for further consideration of the recommendations of the World Bank's Extractive Industry Review regarding investments by international financing institutions in mining activities in countries affected by conflict;

(b) Requiring companies to adopt appropriate international standards and follow international guidelines, such as the OECD Guidelines for Multinational Enterprises;

(c) Endorsing systems for the responsible sourcing of minerals, such as the OECD Due Diligence Guidance for Responsible Supply Chain Management of Minerals from Conflict-Affected and High-Risk Areas, including traceability systems;

(d) Providing technical and financial support to countries willing to implement mechanisms aimed at fighting illegal trade in conflict minerals, such as the Kimberley Process Certification Scheme.

54. Transparency over the revenues flowing from companies to governments is believed to be a critical first step to better accountability and better use of minerals revenues for sustainable development. Rapid change has taken place in this domain since 2002, with the development of the Extractive Industries Transparency Initiative, the Kimberley Process and the Publish What You Pay Campaign under the influence of civil society organizations. A total of 33 countries have now signed up to the Extractive Industries Transparency Initiative. International financing institutions and other development partners should consider supporting countries willing to implement existing transparency schemes with adequate capacity-building and training, and promote the exchange of best practices between countries at different levels of implementation.

55. Transparency and accountability on payments from companies to governments and on human right issues are increasingly becoming a requirement from investors, and this has the potential to change the dynamics in which mining companies operate. The recently passed Cardin-Lugar amendment in the United States, which imposes reporting requirements at the project level on payments made to governments by extractive companies listed on the New York Stock Exchange, is but one example of the drive towards more transparency. However, the type of financial flows falling under the scope of the Extractive Industries Transparency Initiative and other reporting instruments is still limited. In the longer run, many experts advocate more transparent and comprehensive accounting standards that would allow for easier disclosure of various types of payments made by firms. Much room for progress remains, as documented for example by a recent study by Revenue Watch.¹²

¹² 2010 Revenue Watch Index, Transparency: Governments and the oil, gas and mining industries, Revenue Watch Institute: Out of the 41 countries analysed in the study, 5 make public the contracts signed with companies, and 15 actively disseminate environmental and social impact study reports. The study also found that some of the countries that signed up to the Extractive Industries Transparency Initiative are among the least transparent regarding the activities of extractive industries operating on their soil.

56. International financing institutions have started to promote transparency and accountability at other points of the value chain, in particular through increased standards for environmental and social performance of mining companies. A number of financial and capital institutions have also adopted principles (the Equator principles), inspired in part from the performance standards of the International Finance Corporation. The international community should consider how to further promote the adoption of principles to guide investments in mining, including through:

(a) Ensuring that international financing institutions finance only those mining projects that respect best practice environmental and social standards, and continuing to improve those standards;

(b) Finding ways to ensure that the principles adhered to are followed in actual projects, for example by regular third-party assessments;

(c) Continuing to promote adequate disclosure of information on all mining projects financed by international financing institutions;

(d) Assessing the needs in terms of adequate disclosure of information relating to mining projects financed by the private sector, e.g. environmental and social impact assessments.

B. Fostering improved performance by the mining industry

57. In the years since the World Summit on Sustainable Development, private sector governance in the mining sector has improved. There has been a multiplication of voluntary guidelines, voluntary principles — both broad-based and on specific issues such as worker safety and engagement with local communities, developed by the industry and other stakeholders. Principles and guidelines of the International Council on Mining and Minerals, the Natural Resource Charter, and the policy framework recently put forward by the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development are examples. Another area where changes have occurred rapidly is that of reporting. Many large companies now subscribe to the Global Reporting Initiative standards, and others have chosen to embrace other standards. Sustainability reports have become more and more common. While much more is needed, the trend is encouraging.

58. Governments can directly impact the performance of mining companies by:

(a) Adopting and enforcing environmental and social regulations for mining;

(b) Ensuring that companies involved in human rights abuses or that are failing in their environmental and social obligations are held accountable to the legal system;

(c) Requiring that multinational companies operating in the country apply best-practice technologies, or at least apply the same technologies consistently across operations worldwide;

(d) Requiring that their domestic financial institutions apply relevant sustainability criteria and safeguards to mining project finance;

(e) Requiring from mining companies listed domestically to disclose relevant corporate information in their yearly reports, in a way similar to what is being put in place in the United States;

(f) Establishing national dialogues between companies and the government in order to foster the adoption by companies of best practices in the areas of resource efficiency, environmental and social impact assessments, human rights, participation of local communities, and local community development.

59. Companies should ensure that corporate social responsibility activities undertaken by them are fully compatible with and reinforce national sustainable development objectives, actions and policies relevant to the areas where they operate. Governments have a variety of options at their disposal to ensure such coordination. These include: introducing nationally adapted frameworks for corporate social responsibility engagement by mining companies; monitoring corporate social responsibility activities undertaken by mining companies; promoting the adoption of corporate codes of conducts, such as the OECD guidelines or the corporate social responsibility strategy for the Canadian mining sector operating abroad; and supporting NGOs that provide independent, third-party evaluation of the corporate social responsibility performance of mining companies.

60. Civil society and the international community could support enhanced corporate performance in the mining sector by:

(a) Continuing to support greater transparency of the mining sector, including broader disclosure of information on mining projects to the general public and affected communities, transparency over revenues and their allocation, and companies' performance;

(b) Continuing to document and evaluate the performance of the industry and disseminating the results thereof to the broader public;

(c) Promoting the adoption by individual companies of voluntary standards and best practices, many of which have been compiled over the last decade;

(d) Promoting third-party certification schemes that address environmental and social issues associated with the mining of gold and precious stones;

(e) Requiring corporate social responsibility and sustainability reports from companies;

(f) Helping local communities to build capacity, and in particular supporting capacity-building in the artisanal and small-scale mining sector.

C. Improving national governance

61. Parallel to improvements in transparency at the international level, transparency and accountability of governments to their population regarding the exploitation of natural resources, the revenues they generate, and the redistribution of such revenues is also a prerequisite for sustainable development.

62. Features of good practices with respect to mining licences include the following: efficient systems for the management of information related to mining; clear and transparent processes; objective criteria for the grant of exploration and mining licences; and limited administrative discretion. As an example of

transparency, the Namibian Department of Minerals and Energy operates a Computerized Title Management System, which covers all transactions throughout the lifetime of a mineral title and permits access by members of the public.

63. Options at the national level to increase transparency regarding the contracts between governments and mining companies include:

- (a) Adopting internationally promoted codes of transparency such as the Extractive Industries Transparency Initiative and the Kimberley Process Certification Scheme;

- (b) Increasing the disclosure of exploration and production contracts signed between governments and companies by making public an agreed set of variables relating to these investments;

- (c) Making available to various levels and branches of government and the general public the tax regime applicable to mining activities as well as conditions applying to specific investment projects (e.g., tax exemptions);

- (d) Producing and disseminating budget information, including at the local level.

One way to support these objectives is through the passing of legislation guaranteeing freedom of information.

64. Transparency over the allocation and use of revenues can be enhanced by:

- (a) Inscribing them in the law in adequate frameworks;

- (b) Ensuring that the allocation rules are enforced and that information on how they should be received is made available to local and subnational levels of government on a regular basis;

- (c) Providing for legal channels to oversee and supervise the use of revenues;

- (d) Providing effective feedback mechanisms to local communities and regions as well as at the national level in order to convey priorities and needs and evaluate and report on the effectiveness of the use of revenues;

- (e) Developing adequate communication mechanisms between institutions involved in revenue management at different levels and promoting communication between institutions;

- (f) Developing local capacities to manage revenues.

65. Governments can enhance the local contribution of mining to sustainable development by:

- (a) Recognizing the land rights of communities, including indigenous peoples, and ensuring access of local communities to the legal and administrative system relating to land rights;

- (b) Creating and enforcing a legal framework conducive to meaningful participation of local communities and disadvantaged groups in decision-making relating to mining;

- (c) Encouraging NGOs to build the capacity of local communities to know their rights and engage with mining companies during project implementation.

(d) Providing and implementing legal recourse systems for affected communities, in addition to encouraging direct settlement mechanisms between companies and the affected communities.

66. Many experts consider that in order to improve governance in the sector, the issue of conflicts of interests in government and regulatory agencies should be given serious consideration. The fact that trained personnel from government departments have the opportunity to join more lucrative positions in the industry when they leave public service has been noted as a source of corruption and conflicts of interests in developed and developing countries alike. The negative impacts of this effect can be more pronounced where capacity is already limited in government.

VI. Building and reinforcing national capacities

67. The issue of adequate capacity of governments cuts across the whole life cycle of mining operations. In many countries, including developed countries, the existence of gaps in government capacity has been identified as one of the main obstacles to achieving more favourable outcomes. Governments need to build capacity to survey their mineral resources, to deal with companies on a fair basis, to design laws and regulations in the mining sector, to enforce environmental and social regulations, to monitor the economic, social and environmental impacts of mining activities, and to manage the revenues that accrue from mining.

68. More broadly, but perhaps even more importantly, governments also need to be able to design and implement development plans in order to fully use mining activities and mineral wealth to create wealth in other sectors that will survive mine closure. This includes building strong backward and forward linkages between mining activities and the rest of the economy. In many countries, this supposes reinforcing institutions able to elaborate such plans.

69. A first area where needs have been identified is the need to reinforce the technical, legal and fiscal capacities of government officials, with a view to improving the capacity of governments to negotiate fair deals with multinational companies. The international community could support this goal. One option could be the creation of a critical mass of specialized experts which could be shared, for example at the regional level. NGOs could provide support to small countries lacking adequate resources to train enough personnel. In a more general sense, there is a need to develop the broader capacity of national legal and administrative systems to monitor and oversee large-scale investment contracts.

70. Building the institutional capacity to manage mineral revenues, including at subnational levels when applicable, is also critical. International cooperation already exists in this domain. For example, the Oil For Development Institute of Norway provides advice and capacity-building on macroeconomic management of revenues from extractive industries.

71. Adequate capacities should exist at the national and subnational levels of government for enforcing laws and regulations relating to health, working safety and the environment. Capacity to evaluate environmental and social impact assessments and to monitor them at later stages of projects has to be reinforced. It is also important to provide enforcement personnel with adequate compensation in order to avoid depletion of agency staff. In many countries, there is need for

strengthening the capacities of local and national governments for the safe management and disposal of waste produced by the mining sector.

72. There is scope for international institutions, as well as bilateral, regional or subregional cooperation, to provide support to governments, in particular in the following areas:

- (a) Identification and survey of national mineral resources;
- (b) Provision of training and capacity-building for mine closure and rehabilitation;
- (c) Technical assistance and training to help countries build capacity to effectively comply with the Extractive Industries Transparency Initiative and other transparency initiatives, in areas related to monitoring mining and trade activities, enforcement, fighting smuggling and illegal trading networks for diamonds and gold;
- (d) Support to draft legislation relating to mining codes, including for artisanal and small-scale mining; transposing ILO core conventions and other international instruments into national legislation; and environmental legislation applying to mining activities, including integrated environmental and social assessments.

VII. The way forward

73. As examined in the present report, a number of sweeping changes have taken place in the mining sector since the World Summit on Sustainable Development in 2002. Progress has been achieved on transparency and good governance of the sector. Many major companies have embraced progressive voluntary guidelines and principles as a framework for their operations, while pursuing resource efficiency improvements. Standards being adopted by the financial sector and capital markets have the potential to contribute to greater transparency and to help ensure that the welfare of populations affected by mining operations are given due concern.

74. This progress in different areas should not mask the remaining gaps. Many countries could probably enhance the contribution of their mineral wealth to their national economies. Steps remain to be taken towards increased transparency from governments to citizens on mining activities and the revenues they generate. Information disclosure, respect of human rights, land rights and livelihoods of local and indigenous communities, environmental and social impacts of mining activities and, more generally, relations among governments, companies and citizens are also areas in which further progress is needed. In all this, addressing inadequate capacity in national governments is critical.

75. The challenge for the international community is to find adequate ways to help countries make the most of their mineral wealth. This can be achieved through technical cooperation; through exchange of good practices; and through the pursuit of international initiatives on transparency. During the discussions at the eighteenth session of the Commission on Sustainable Development, a global initiative for sustainable mining was proposed for consideration, encompassing such areas as facilitating policy dialogue, defining product standards, promoting responsible behaviour and transparency, and encouraging greater resource efficiency and

recycling. Also mentioned at the session were: international cooperation to advance measures to strengthen governance, transparency and public accountability; building technical and managerial capacities; developing new mining technology; promoting investment and technology transfer; and ensuring rehabilitation and benefit-sharing.

**Economic and Social Council**Distr.: General
16 December 2010

Original: English

Commission on Sustainable Development**Nineteenth session**

2-13 May 2011

Item 3 of the provisional agenda*

Thematic cluster for the implementation cycle**2010-2011 — policy session****Policy options and actions for expediting progress in
implementation: a 10-year framework of programmes
on sustainable consumption and production patterns****Report of the Secretary-General****Contents**

	<i>Page</i>
I. Introduction	3
A. Mandate	3
B. Value added of a 10-year framework of programmes on sustainable consumption and production	4
C. Defining the scope of the 10-year framework of programmes	6
II. Outline of a 10-year framework	8
A. Guiding principles	8
B. Functions	9
C. Components of a 10-year framework of programmes	12
III. Review of the potential institutional structure for a 10-year framework of programmes	12
A. Performance criteria	12
B. Comparative assessment of models	13

* E/CN.17/2011/1.

IV. Potential programmes	17
A. Lessons learned and gaps	18
B. Submitted programmes	20
V. Way forward	22
A. Possible shape of an agreement at the nineteenth session of the Commission on Sustainable Development	23
B. Bridge to the United Nations Conference on Sustainable Development	26
Annex	
Examples of submitted programmes: sustainable buildings and construction	27

I. Introduction

1. The objective of the present report is to clarify the issues involved in assessing the various options for a 10-year framework of programmes on sustainable consumption and production. The report has benefited from the contributions of the United Nations Environment Programme (UNEP) as well as inputs from other United Nations agencies.

A. Mandate

2. Sustainable consumption and production is a key instrument for the achievement of progress towards sustainable development. The Plan of Implementation of the World Summit on Sustainable Development (Johannesburg Plan of Implementation) describes sustainable consumption and production as one of the three overarching objectives and essential requirements for sustainable development, together with poverty eradication and the protection and management of the natural resource base. Sustainable consumption and production denotes a range of actions that enable countries, households and enterprises to "do more and better with less", including actions of a win-win nature or those that could become win-win in nature through the application of targeted policy interventions, infrastructure investments or awareness creation.

3. Chapter III of the Johannesburg Plan of Implementation calls for actions to "encourage and promote the development of a 10-year framework of programmes in support of regional and national initiatives to accelerate the shift towards sustainable consumption and production to promote social and economic development within the carrying capacity of ecosystems by addressing and, where appropriate, delinking economic growth and environmental degradation through improving efficiency and sustainability in the use of resources and production processes and reducing resource degradation, pollution and waste". Recognizing the Rio Principles, it calls on all countries to take action, with developed countries taking the lead and taking into account the development needs and capabilities of developing countries.

4. At the eleventh session of the Commission on Sustainable Development, sustainable consumption and production was designated as one of the cross-cutting issues to be addressed in every implementation cycle of the Commission, and the 10-year framework of programmes as one of the thematic issues to be taken up in the fourth implementation cycle, in 2010-2011.

5. Following the decision at the eleventh session, several countries cooperated to establish the Marrakech process, an informal global multi-stakeholder process to support the implementation of sustainable consumption and production through the wider dissemination of relevant knowledge and best practices. Under the Marrakech process, thematic task forces, round tables, expert meetings and regional consultations were organized and the promotion of collaboration and partnerships encouraged.

6. At the eighteenth session of the Commission on Sustainable Development, an in-depth review of the activities of Member States and major groups in the area of sustainable consumption and production, including activities under the aegis of the Marrakech process, was undertaken. Five broad lessons can be drawn from this

review. First, a large number of sustainable consumption and production initiatives are already in place at the national and regional levels, albeit often under other names. Second, notwithstanding differences in nomenclature or thematic focus, all initiatives share some common features, most notably that they are aimed at the removal of barriers to the realization of unexploited win-win opportunities. Third, the most successful initiatives are those that involve mutually supportive partnerships among Governments, the international community, civil society, private enterprises and other major groups. Fourth, notwithstanding some successes, there continue to be significant economic, informational, institutional, capacity-related and policy-induced barriers to the wider diffusion and adoption of measures and achievements related to sustainable consumption and production. Finally, existing sustainable consumption and production initiatives are fragmented along sectoral, national, ministerial and industrial lines.

7. Two policy implications derive directly from the above lessons: first, that active public policy intervention will continue to be needed in order to overcome barriers to progress; and second, that policy coordination and coherence are needed in order to overcome fragmentation, duplication and dissonance among various initiatives and instruments, as well as between these initiatives and mainstream policy measures. Simply stated, the two policy lessons are that what is needed are, on the one hand, more programmes and initiatives and, on the other hand, a unifying framework of programmes that can reduce fragmentation and dissonance.

8. Taking into account these policy implications, as well as the history of previous intergovernmental decisions, in particular the previous outcomes of sessions of the Commission on Sustainable Development, the present report analyses whether and how the 10-year framework of programmes could add value to existing or future national and regional initiatives and, consequently, what the optimal scope and institutional structure of the 10-year framework of programmes could be; how best it could support, mobilize and synergize the energies of the entire United Nations system and those of civil society, the business sector and other major groups; how best it could promote coherence and partnerships; and which concrete programmes could be identified as its initial elements or building blocks.

B. Value added of a 10-year framework of programmes on sustainable consumption and production

9. Several sustainable consumption and production initiatives are in place already. The value added of a 10-year framework of programmes must be judged, therefore, on five criteria: its ability to support, accelerate, synergize, mobilize and legitimize. In the first instance, a well-crafted and coherent 10-year framework would be able to support ongoing initiatives and others that may be in the pipeline. In the second instance, such a framework must be able to accelerate the diffusion and replication of such programmes by promoting the sharing of knowledge and experience and removing barriers to adoption. Third, it must promote and enhance synergies among existing programmes and between these programmes and other mainstream policy measures. Fourth, it must be able to mobilize all United Nations system entities, as well as governmental ministries and agencies, the private sector, civil society and other major groups. Finally, a 10-year framework can provide legitimacy and predictability to the voluntary efforts currently under way.

10. Several points need to be made at the outset. First, the Commission on Sustainable Development is the only intergovernmental forum which regularly offers Member States a chance to share experiences, assess risks and challenges and make informed decisions based on an integrated perspective on economic, social and environmental objectives. Such a forum is important to address remaining uncertainties about how best to foster programmes related to sustainable consumption and production that enhance environmental performance without jeopardizing the developmental aspirations of developing countries and countries with economies in transition.

11. Second, existing programmes related to sustainable consumption and production have a number of achievements to their credit, but they face significant obstacles to replication and universalization. For example, the Marrakech process has been effective as an interim means of bringing together communities of interest and sharing knowledge and information among countries and regions, yet its credibility and legitimacy, and consequently its sustainability, are weakened by the fact that it is a voluntary initiative, without a formal mechanism or intergovernmental endorsement. Many other mechanisms, including those that are not necessarily labelled as pertaining to sustainable consumption and production, e.g., national cleaner production centres, networks of local authorities and networks of researchers, have produced results and developed relevant knowledge on sustainable consumption and production, but face challenges because of the fact that they are often not, or are only weakly, connected to one another. The 10-year framework of programmes could support the implementation of sustainable consumption and production initiatives by providing coherence and consistency in goals and implementation, and facilitating the cross-fertilization of ideas and the sharing of good practices which can be adapted to different national and regional needs and circumstances. The 10-year framework of programmes could help to identify and exploit synergies among programmes and initiatives and help countries to monitor progress towards their own goals and objectives.

12. Third, as was highlighted at the eighteenth session of the Commission on Sustainable Development, there is often a lack of coherence in policy instruments targeting the same sectors and areas. A framework of programmes could enable countries to address such inconsistencies by adopting integrated policies and measures. This may be the result of a lack of knowledge about good cost-effective policies or a lack of political will to undertake stronger measures instead of relying exclusively on voluntary action. Finally, Governments have an express need to ensure that sustainable consumption and production initiatives can be adopted without weakening or reversing measures undertaken to alleviate poverty, e.g., subsidized energy, water or other natural resources. A 10-year framework of programmes could help remove this dichotomy between resource-use incentives and pro-poor policies.

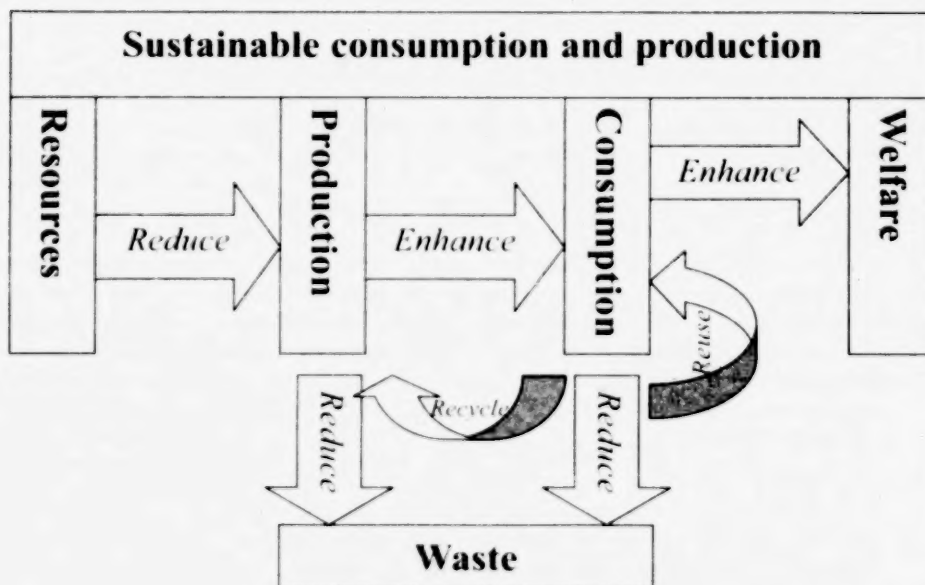
13. Fourth, significant impacts arise along supply chains through globalized production systems; national actions need to be supplemented by global solutions. Nevertheless, initiatives at the local, national and regional levels must reflect the different sets of priorities that are in part a function of the different levels of social and economic development of countries. A flexible 10-year framework of programmes would provide a foundation for devising such global solutions while recognizing national sovereignty, priorities and specificities.

14. Finally, sustainable consumption and production is a cross-cutting issue that requires cooperation and coordination among national ministries, including ministries of industry, economics, finance, natural resources, environment, education and social affairs, as well as international entities, including United Nations departments, agencies, funds, programmes and regional commissions, and international financial institutions. Without a framework endorsed at the highest level, activities related to sustainable consumption and production are likely to remain confined mostly to single ministries or agencies, without the benefit of knowledge-sharing, replication and the scaling up of successful experiences.

C. Defining the scope of the 10-year framework of programmes

15. The main elements of sustainable consumption and production are fairly straightforward. As shown in the figure below, natural resources are used for the production of goods and services, which are consumed to provide human welfare. The production and consumption processes also produce waste materials, which get deposited in sinks. Some measures related to sustainable consumption and production are aimed at reducing the volume of natural resources needed to produce a given amount of goods and services. Others are designed to enhance the efficiency of production and consumption activities through better organization, information and planning. A third set of measures is aimed at enhancing the welfare obtained by a given level of consumption. Finally, some measures seek to reduce waste by reusing and recycling waste materials.

Life-cycle, or systems, perspective on sustainable consumption and production



16. From the various initiatives on sustainable consumption and production elaborated by Member States, major groups and other actors over the past decade, a

few activities have emerged as good practices. Resource, material, water and energy efficiency comprise a central dimension of sustainable consumption and production, as they enable more goods and services to be produced with fewer resources. Similarly, sustainable agriculture practices aim at increasing agricultural production while reducing the use of water, energy and other primary materials. Appropriately designed measures for sustainable consumption and production can be complementary to initiatives aimed at poverty alleviation and the more rational use of natural resources, since they can make natural resources more readily available and affordable for meeting the basic needs of the poor or broader sustainable development objectives.

17. Another set of measures is aimed at enhancing the quality of consumption or level of human welfare corresponding to particular amounts of goods and services. These include measures concerning sound building codes (which enable greater comfort with lower energy consumption), urban planning and transport (to enhance the quality of life and welfare with the same level of transport services).

18. A final group of measures is aimed at reducing waste volume. These include cleaner production work, sustainable procurement policies and waste-minimization initiatives such as the "3Rs" (reduce, reuse and recycle).

19. An overarching objective for sustainable consumption and production is the promotion of education, awareness and information in order to enable optimal changes in consumer behaviour and lifestyles and the promotion of decent and green jobs.

20. Specific measures to promote sustainable consumption and production include market-based incentives such as eco-taxes, deposit-refund schemes and financial incentives for cleaner production; regulatory instruments, such as efficiency standards for energy-using products; targets for the use of materials, carbon and energy (e.g., sustainable public procurement policies, information disclosure policies), including eco-labelling; investments in clean technology and relevant research, including in green infrastructure and buildings; the promotion of corporate social and environmental responsibility; leadership awards; technical assistance; collaborative problem-solving; and new curricula and educational guidelines and toolkits for formal, non-formal and informal education.

21. Some opportunities with regard to sustainable consumption and production are of an immediate, win-win nature and can be captured through the better sharing of information and technology, as in the work of the national cleaner production centres. Other opportunities have a longer-term timescale and may require an initial period of investment before gains are realized. Finally, there is a third stage, in which the underlying values and technologies adapt to resource constraints.

22. Referring back to the figure above, a life-cycle, or systems, perspective has been the basis of much of the work in the eight years since the World Summit on Sustainable Development. The life-cycle perspective was the basis of the Marrakech process mapping tool to examine and help collect a range of programmes that could be included in the 10-year framework of programmes. In that mapping tool, three cross-cutting programme types (policies conducive to sustainable consumption and production, education and planning, and infrastructure to support programmes related to sustainable consumption and production) were applied to all stages of the life cycle of products and services, from raw materials to end use and disposal. At the eighteenth session of the Commission on Sustainable Development, the European

Union suggested five types of instruments that are useful in advancing sustainable consumption and production: administrative instruments, laws and regulations; fiscal and economic instruments; information and analytical tools; voluntary tools and approaches; and mixes of instruments (e.g., sustainable procurement) that could be applied at four stages of the life cycle of products and services.¹ Building on these two proposed structures, the table in section IV below presents a logical framework for classifying potential programmes to be included in the 10-year framework of programmes that has six life-cycle stages (shown as rows) and six instrument types to promote sustainable consumption and production (shown as columns).

II. Outline of a 10-year framework

23. The value added and potential scope of the 10-year framework of programmes having been defined, the present section lays out the guiding principles of and the functions to be performed by a 10-year framework of programmes if it is to support and add value to existing national and regional initiatives related to sustainable consumption and production, scaling up and sharing what works and creating knowledge where it is missing.

A. Guiding principles

24. While the 10-year framework of programmes needs to be informed and supported by all the Rio Principles, some of those principles merit mention for their specific relevance:

(a) Principle 8 directly calls for a shift to sustainable consumption and production patterns as a condition for achieving a higher quality of life for all people;

(b) The common but differentiated responsibilities among States established in principle 7 recognize the varying levels of industrialization, income, consumption and production that have an impact on environmental resources to varying degrees. The principle also acknowledges differentiated capabilities, which condition the scope for national action and international support;

(c) The polluter-pays principle (principle 16) emphasizes the responsibilities of those causing damage to the environment and human health, while the precautionary principle (principle 15) stresses the importance of avoiding grave and irreversible damage, whether directly to human life or to the Earth's life-support systems;

(d) These two principles are further supported by principle 10, which addresses the rights of all citizens to have appropriate access to information concerning the environment and environmental risks, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes.

¹ The structures proposed by the European Union substitute the five types of instruments for the cross-cutting programmes proposed in the Marrakech process mapping tool. The European Union also proposed reducing the number of life-cycle stages to four by integrating distribution and marketing in the "better product" stage. The structures also integrate the waste-management stage into a broader category of strategies related to sustainable consumption and production that cover all stages of the life-cycle approach.

B. Functions

25. The core functions of the 10-year framework of programmes derive directly from its potential contribution, namely to support, accelerate, synergize, mobilize and legitimize. These overlap significantly with the aims of the Marrakech process, namely catalysing the commitment to ambitious but realistic goals related to sustainable consumption and production; supporting knowledge-sharing, networking and collaboration; enabling strategic planning and investment in institutions and infrastructure to support sustainable consumption and production, leveraging resources in support of sustainable consumption and production, including from the private sector by, for instance, mainstreaming corporate social and environmental responsibility; providing access to technical assistance, and raising awareness through education and the mobilization of civil society.

26. **Setting shared goals.** Strong political commitment and endorsement, supported by a shared vision, has proved to be key in other intergovernmental processes, such as the Millennium Development Goals, the Global Alliance for Vaccine and Immunization and the Strategic Approach to International Chemicals Management. The agreement on a 10-year framework of programmes could provide a global focus on common goals that reflect national and regional differences in priorities and circumstances.

27. **Knowledge-sharing.** Any successful global framework will naturally function to support knowledge-sharing, networking and collaboration to strengthen and extend communities of practitioners in the area of sustainable consumption and production, providing a central means of linking such communities across countries, regions and institutions. The 10-year framework of programmes should serve to build stronger bridges among communities of policymakers and policy researchers, national Governments, businesses, non-governmental organizations, local authorities and other stakeholders. In this regard, the 10-year framework of programmes should be designed to provide a knowledge bank for anyone seeking policy guidance, incorporating networks of experts offering policy advice, policy tools that have proven useful and advice on practical solutions related to sustainable consumption and production in different sectors or areas of endeavour. A dynamic feedback process whereby sets of policies and tools grow as more experience is accumulated and knowledge is shared on which policies, or sets of policies, work best for which types of problems related to sustainable consumption and production, would also be useful.

28. **Strengthening collaboration.** Continued collaboration is required to foster effective partnerships and advance various aspects of sustainable consumption and production initiatives, particularly at the regional and global levels. Within the community of those engaged in policy and practice related to sustainable consumption and production, there are specialized subcommunities, e.g., procurement policymakers and practitioners, managers of and major groups involved in global supply chains, architects committed to sustainable building design and urban planners that focus on sustainability issues. The most intensive communication is likely to happen among such specialized practitioners, and will occur even without a 10-year framework of programmes, but such a framework could support efforts to make such communities more inclusive, with particular outreach to developing countries and major groups, and should also aim to facilitate knowledge-sharing and cross-fertilization among communities of practice.

29. The Strategic Approach to International Chemicals Management and the Marrakech process offer examples of such networking at the global, regional and national levels. In the Strategic Approach, the regional networks are formally established and feed into its governing body, the International Conference on Chemicals Management. The Quick Start Programme of the Strategic Approach encourages multi-stakeholder approaches by providing limited funding for initial enabling activity in five pre-agreed priority areas. In the Marrakech process, networking occurs through coalitions of interested parties, notably in the task forces but also through regional round tables and at the international expert meetings.

30. In terms of inclusiveness and the accommodation of knowledge contributions from civil society, business and higher education, the Strategic Approach and the Global Alliance for Vaccine and Immunization models are good examples. UN-Water, UN-Energy and UN-Oceans also have had success in fostering greater coherence among multiple initiatives and programmes with overlapping objectives within the United Nations system. A similar model could be followed to foster greater collaboration within the United Nations system, including with the international financing institutions, on implementing the sustainable consumption and production agenda. The challenge will be for the United Nations to reach out, engage and interest other partners in collaboration.

31. **Strengthened partnerships.** As partnerships should and will have a role to play in implementing a 10-year framework of programmes, more consideration needs to be given to effective partnership models. If a greater consistency in approach is required, there will be a need for a common vision and established procedures for the development and operation of the partnerships. That in turn requires an overall mechanism for the oversight of initiatives within the 10-year framework to ensure that such initiatives are consistent with each other and to avoid unnecessary overlaps or duplication, while supporting national and regional needs and priorities. The 10-year framework could serve this function by facilitating the creation of new partnerships in areas of need, providing incentives for existing partnerships to become more active and effective, and providing a platform for the sharing of experiences and resources among partnerships, as well as support for new innovations among and across sectors, including innovative tools and channels (e.g., using new information technologies) for the engagement of civil society actors in the implementation of actions related to sustainable consumption and production across countries and regions. Several evaluations of existing partnerships offer potential ways to strengthen and increase the effectiveness of partnerships.

32. Lessons learned on partnership include the need for the following:

- (a) Clear goals and time frames for achieving such goals, with open reporting of decisions, actions and results;
- (b) Sufficient funding for the implementation of the project and to assure the effective participation of all partners, particularly smaller non-governmental organizations, local businesses and local authorities;
- (c) Periodic proper evaluation.⁷

⁷ See www.earthsummit2002.org/ci/index.html, www.earthsummit2002.org/es/preparations/global-partnerships.pdf and www.stakeholderforum.org/CSD/CSDWorkshopPaper5_H.pdf

13. Enabling frameworks. Strategic planning and investment are inseparable and necessary to empower national Governments and other relevant actors in creating policy, institutional conditions and infrastructure that support a shift towards sustainable consumption and production patterns. A 10-year framework of programmes could foster global and regional networks of practice among decision makers that influence consumption and production patterns. The Strategic Approach to International Chemicals Management, the Global Alliance for Vaccine and Immunization and the Consultative Group on International Agricultural Research demonstrate how much can be achieved with stable and predictable funding to underpin initiatives. The practice of the Global Alliance of rewarding Governments that exceed their immunization targets is notable, as it enabled Governments to invest in improvements elsewhere in their health systems. The Consultative Group also offers a good example of national support to strengthen national agricultural research systems. The Marrakech process structure involving task forces and regular forums for the exchange of information and experience among practitioners could also be effective, but it lacks a stable and predictable funding base.

14. Technical assistance. The 10-year framework of programmes must offer a convenient means of accessing technical assistance for those working on sustainable consumption and production at the community, national and regional levels. To do this, the framework could establish links and encourage cooperation and coordination among various existing technical centres (e.g., cleaner production centres, round tables on sustainable consumption and production and centres of excellence on waste management and chemical management) and technical assistance programmes with overlapping areas of expertise, as has been done successfully through the Consultative Group on International Agricultural Research for decades. Capacitated regional centres can then address sustainable consumption and production issues in their respective regions, and adapt or develop tools and other approaches to assist Governments and support the various ministries working on sustainable consumption and production. Incorporated into consortia, these centres could serve as catalysts for cooperation and collaboration among actors in the region and assist in reducing duplication and identifying gaps. The private sector is also increasingly collaborating to develop sectoral technical assistance, as illustrated by the Cement Sustainability Initiative, a global effort by 23 major cement producers accounting for over 40 per cent of the world's cement production that, with the World Business Council for Sustainable Development, is tackling the industry's carbon footprint. The 10-year framework of programmes should be flexible enough to support and build on such initiatives,³ as well as those of communities and local authorities. The Consultative Group also offers a good model for funding research and implementation, receiving contributions from the World Bank, development banks and development agencies. The Strategic Approach to International Chemicals Management supports enabling activities through the Quick Start Programme, and the interlinkages between the regional and global networking structures provide a sound framework for supporting Governments and accessing knowledge and expertise across sectors.

15. Awareness-raising, education and mobilization of civil society. A final and critical function that an effective 10-year framework of programmes would perform

³ See http://dev.wbcsdcementimplc.com/index.php?option=com_content&task=view&id=55&Itemid=116.

is awareness-raising, education and mobilization of civil society. Ideally, the 10-year framework would raise the visibility of sustainable consumption and production as a goal for the international community and all stakeholders, including through the facilitation of global public and private campaigns to achieve specific sustainable consumption and production goals and targets. This can be supported by leveraging major groups (which include business and industry) and other civil society actors by using innovative tools and channels. The Millennium Development Goals offer a successful model for setting goals, and allowing all actors to find their best path to meeting those goals may be applicable. Providing a platform for educators within and across regions to share curriculum materials and other resources for teaching sustainability issues and sciences at all levels is also essential to avoid duplication. Support to local and national groups dedicated to popularizing sustainable lifestyles, values and behavioural change should also be provided.

36. The Partnership for Education and Research about Responsible Living is one example of such a partnership; it includes educators and researchers from over 100 institutions in more than 40 countries. The Partnership aims to advance education for responsible living by focusing on consumer citizenship, education for sustainable consumption, social innovation and sustainable lifestyles.

C. Components of a 10-year framework of programmes

37. To maximize the ability to fulfil all these functions, the 10-year framework of programmes is likely to have two broad components: the institutional arrangements for the framework and a set of programmes which together could support the implementation of the agreed goals and objectives of a such a framework. The following sections focus on potential institutional arrangements.

III. Review of the potential institutional structure for a 10-year framework of programmes

38. During the eighteenth session of the Commission on Sustainable Development, several Member States suggested various models, including the Strategic Approach to International Chemicals Management and the Marrakech process, as potential institutional arrangements to inform the design of the 10-year framework of programmes. In addition to these two models, four other international cooperation and collaboration models that involve a wide range of participants and stakeholders were reviewed to guide Member States in their deliberation.

A. Performance criteria

39. Six models were reviewed according to nine performance criteria to judge their relevance for the 10-year framework of programmes. The models reviewed were the Marrakech process for sustainable consumption and production; the Strategic Approach to International Chemicals Management; the UN-Water, UN-Energy and UN-Oceans inter-agency coordination mechanisms; the Global Alliance for Vaccine and Immunization; the Millennium Development Goals; and the Consultative Group on International Agricultural Research.

40. The performance criteria were as follows:

- (a) Global focus for a common vision and common goals, and a scheme for monitoring progress towards these goals and vision;
- (b) Credible and accessible science base and policy interface, as well as effective mechanisms of dissemination to key stakeholders and actors;
- (c) Support of national and regional initiatives, and value added through tools, policies, partnerships and other means of implementation;
- (d) Facilitation of the broad participation of stakeholders, including all relevant United Nations system entities, international and regional institutions, different ministries in national Governments and major groups;
- (e) Mobilization of United Nations system entities and support for coherence among their actions, and coordination of policies and programmes and building cooperation and synergies within the United Nations system;
- (f) Flexibility, i.e., the accommodation of the needs and priorities of different countries at different levels of development, with different resource endowments and institution types, allowing the integration of new knowledge and experience and responding to new and emerging challenges;
- (g) Effectiveness and scale of impact in bringing together different actors and entities, delivering support at the regional and national levels, scaling up and replicating current good practices and generating new and innovative ones;
- (h) Incentives to continual improvement, providing inducement and support to all stakeholders;
- (i) Leveraging of resources and action and helping to mobilize technical and financial resources beyond what individual initiatives and programmes in isolation might have been able to achieve.

B. Comparative assessment of models

41. The present section provides an assessment of whether and how far the different models could be expected to meet the desired functions of the 10-year framework of programmes and how well they fare compared with the performance criteria elaborated above.⁴ Although the six models reviewed addressed different issues, and only the Marrakech process was established specifically for meeting goals related to sustainable consumption and production, the models were selected because they all respond to a global issue that cannot be dealt with by one country acting alone, that requires global cooperation and that requires the participation of a wide range of actors for success, and because they generate confidence among the intergovernmental policy audience.

⁴ A full comparison of the models was made available to Member States as background document No. 1 for the high-level intersessional meeting on the 10-year framework of programmes on sustainable consumption and production, to be held on 13 and 14 January 2011 in preparation for the intergovernmental preparatory meeting and the nineteenth session of the Commission on Sustainable Development.

42. In their current form, none of the models on its own would deliver all the functions elaborated above and adequately meet all performance criteria; however, all of the models have some lessons to offer. The models are at different levels of maturity: some have been in place for only four years, while others have functioned for an equivalent number of decades; some are involved directly in areas considered to lie within the ambit of sustainable consumption and production, while others have led to systemic changes of the type envisaged for sustainable consumption and production. Nevertheless, since the models were evaluated not for the subject matter alone but rather for their capacity to provide a model for a good institutional structure, these differences are of lesser importance.

43. Most models seek to involve a wide range of actors. There are key differences, though, in the extent to which the full range of participants is involved in the oversight and governance arrangements. The Strategic Approach to International Chemicals Management, the Global Alliance for Vaccine and Immunization and the Consultative Group on International Agricultural Research have formal and specific governance arrangements developed by their key partners or stakeholders. The governing body of the Strategic Approach, the International Conference on Chemicals Management, provides for the full involvement of all stakeholders in its rules of procedure, while the Global Alliance and the Consultative Group have formalized management arrangements that include representatives of the major participants. Both the Global Alliance and the Consultative Group have substantial fiduciary responsibilities, and the relationship among key partners is reflected in legal agreements. The UN-Water, UN-Energy and UN-Oceans models either have no formal governance or are limited to the representation of United Nations agencies. The Marrakech process has an informal advisory committee that represents regions and major groups.

44. **Global focus for common vision and goals.** All models have goals or objectives that provide focus for participants. In the case of the Millennium Development Goals and the United Nations inter-agency model, the goals and objectives were dictated by intergovernmental decisions. In the case of the Strategic Approach, the Consultative Group and the Global Alliance, they were negotiated in the establishment process. The arrangements for monitoring, evaluation and review are strongest among the two partnerships with the most focus and fiduciary responsibility, namely the Global Alliance and the Consultative Group. The Millennium Development Goals are monitored through a process led by the United Nations Development Programme that provides annual updates on progress, along with an annual report to the General Assembly. The Millennium Development Goals, universally endorsed at the highest levels, have helped galvanize the international community, civil society and the business sector. The strong monitoring component of the Millennium Development Goals model is driven, in part at least, by the alignment of both Government budgets and donor support for achieving measurable progress towards the goals.

45. **Science base and policy interface.** The Consultative Group, by its nature of being a partnership of research organizations, has a strong science base and has developed effective mechanisms for disseminating its products through its national partners, agricultural extension services and broadcast and other media. In the inter-agency model, the science and policy base lies mainly with the participating agencies, although they also disseminate information through specific platforms. In both the Marrakech process and Strategic Approach models, scientific, technical and

socio-economic issues are identified and responded to through the models, and the dissemination of information uses the structures developed at the global, regional and national levels as part of these models. UN-Oceans relies on the core competence of the United Nations agencies to bring science and policy knowledge on specific issues. The Strategic Approach also relies on the distributed knowledge of agencies, the private sector and universities.

46. Support national and regional initiatives. The Consultative Group has been instrumental in building the capacity of national agricultural research centres, initially mentoring them and then partnering with them to implement programmes and conduct research at the national level. The presence of such centres in developing countries has been very valuable in that regard. The benefit of the United Nations inter-agency model is that it allows for the coordination of product delivery among the participating agencies, although it is clear that there is considerable room for improvement. To varying degrees, the United Nations inter-agency model engages participating agencies in responding in a coordinated manner to national and regional priorities and needs. For instance, UN-Water has a task force on country-level coherence that aims to improve and scale up the delivery of coordinated United Nations actions in the area of water supply and sanitation. At the same time, these United Nations coordination mechanisms bring together agencies and entities with different mandates, some more normative and others more operational, and with varying regional and national presences. The Global Plan of Action of the Strategic Approach to International Chemicals Management reflects stakeholder priorities and is the basic guidance tool for implementation of the Strategic Approach. The integration of national and regional consultation processes ensures that relevant national and regional initiatives are identified and, where practicable, are the basis for implementing actions, including those undertaken with the support of the financial mechanism. The Strategic Approach model is also effective in identifying gaps that require responses beyond national or regional capabilities. A similar approach is taken in the Marrakech process, although it is less formalized. Regional and national priorities have been identified, and collaborative programmes developed and implemented to address those priorities.

47. Broad participation of stakeholders. The United Nations inter-agency model differs from the other models reviewed in that it is mainly limited to the United Nations family. One key feature of the Global Alliance for Vaccine and Immunization is that it involves a wide range of stakeholders in the delivery of vaccines; the governance arrangements involve a narrower representation, with legal agreements between key partners. The Consultative Group on International Agricultural Research also has a broad participation of stakeholders in delivery arrangements, but not in governance. The incentive for participation by stakeholders relates mainly to access to the products: vaccines or research results. Both the Strategic Approach and the Marrakech process have a wide participation of stakeholders, but with differing degrees of formality. The Strategic Approach is a community of partners, comprising stakeholders from Governments, intergovernmental organizations and civil society, including the private sector. The secretariat of the Strategic Approach maintains a network of national and other focal points. The designation of focal points provides an important mechanism for communication and access to support from the Quick Start Programme Trust Fund. Participation in the Strategic Approach involves formal endorsement by the governing bodies or chief executive officers of agencies. Incentives for participating relate to improved access to funding.

knowledge-sharing and the potential for collaboration. The Marrakech process brings together a range of different stakeholders: Governments, non-governmental organizations, business and industry, researchers and academia, local authorities, intergovernmental organizations and relevant United Nations agencies. Incentives for participation relate primarily to knowledge-sharing and leveraging capacity by collaboration. The Millennium Development Goals are a textbook example of how setting a limited number of goals and targets around which there is broad consensus can bring together expertise and commitments from various agencies and major groups, including the business sector.

48. Effective and coherent mobilization of the United Nations system. The extent to which models are effective in mobilizing United Nations system entities and enhancing coherence among their actions depends on the degree of formal involvement and accountability of the agencies. When such involvement and accountability are voluntary, there is less evidence of both active involvement and enhanced coherence. When either a legal agreement or formal endorsement is involved, then the effectiveness seems enhanced. In the case of the Millennium Development Goals, each agency integrates the Goals into its programmes and planning structures. A similar approach could be taken for the 10-year framework of programmes, whereas principles and targets related to sustainable consumption and production are included in the programmes of work of the agencies. In the Strategic Approach, coordination and coherence is achieved mainly through the Inter-Organization Programme for the Sound Management of Chemicals, which involves the key agencies active in chemicals management. UN-Water carries out its mandate through time-bound task forces that draw on the expertise of specific United Nations agencies and other partners, as well as provide a platform for coordination among agencies. UN-Oceans increased accountability by working through a "distributed secretariat", with functions divided among participating organizations according to expertise.

49. Flexibility. In the Strategic Approach, the Global Plan of Action reflects the needs and priorities concerning chemicals management of all countries, not only developing countries: some of the needs and priorities are national, others regional or global in nature. The Global Alliance and the Consultative Group both focus on the needs of developing countries, and respond to emerging issues identified not only by their stakeholders but also by donors. The Millennium Development Goals model takes into account the needs and priorities of different sectors and groups in developing countries and is flexible enough to allow for differences in approach. The Marrakech process features a bottom-up approach that allows for national and regional priorities to be identified and responded to.

50. Effectiveness/scale of impact and integration. The Consultative Group, the Global Alliance and the Millennium Development Goals have been in operation for a decade or more, and have been evaluated positively. Other models are more recent and have not been formally assessed. Each model can show some progress, although in each case the magnitude of the challenge exceeds the capacities to deploy the efforts needed to meet the respective goals. It does appear that models that have purpose-built governance arrangements, formal structures, dedicated funding and clearly defined goals are more effective.

51. Incentives to continual improvement. Models that have built-in reporting, such as the Millennium Development Goals, or monitoring and evaluation

processes, such as the Consultative Group and the Global Alliance, have initiated changes in structure and operations that have resulted in improved performance. In the Strategic Approach, incentives for improvement at the country level are provided by making funds available to stakeholders that have formally recognized the Strategic Approach. Other incentives flow from the ability to leverage resources through structured collaboration on projects and initiatives. The Marrakech process has also provided some financial and technical support to foster more actions related to sustainable consumption and production; however, there is no long-term support, and hence little predictability of programme continuity. Given that sustainable consumption and production is a broad concept and that much is still to be learned about how best to foster changes in consumption and production patterns, the incentive for continual improvement is extremely important for the 10-year framework of programmes.

52. **Leveraging of resources and action.** In both the Global Alliance and the Consultative Group, the link among secure and predictable funding, effectiveness and high stakeholder involvement and commitment is apparent. The Global Alliance provides an innovative funding mechanism. It uses the 10- to 20-year legally binding aid commitments of donor countries as pledges to borrow against in capital markets, raising funds that can be disbursed to enable a more concentrated effort early in the programme. The Millennium Development Goal Achievement Fund was established to help national Governments, local authorities and civil society in their actions towards meeting the Goals. The Goals can leverage resources from the private sector and citizens by setting specific goals and inviting all to contribute. Both the Strategic Approach and UN-Water have funds established to assist with activities. The Quick Start Programme of the Strategic Approach provides limited funding for initial enabling activity in the five pre-agreed priority areas. The Strategic Approach has also mobilized donor funding for specific initiatives. The Marrakech process has attracted donor contributions in support of its activities, notably but not limited to the work of the Marrakech task forces and the organization of national, regional and international expert meetings.

IV. Potential programmes

53. Despite the progress achieved in understanding how to delink economic growth from negative environmental and social impacts, more concerted learning and experimentation are needed. For instance, little is known about the mix and the sequence of policies and tools needed to achieve goals related to sustainable consumption and production. Even when the policies are known, there may be difficulties in implementing them. More needs to be known about why so many alleged "win-win" opportunities still go unexploited. If the 10-year framework of programmes were to take as its overriding objective supporting countries in evaluating and seizing all such opportunities within a decade, this would already represent a high level of ambition.

54. Changing sustainable consumption and production patterns will likely involve a sequential approach. If, in the initial stages, a 10-year framework of programmes allows for win-win outcomes by capturing unexploited efficiencies in production and consumption, in the next phase work related to sustainable consumption and production could well require more systemic changes, including changes in energy mixes, technologies and infrastructure, as well as in consumption choices and

lifestyles. Ideally, the initial phase would be one of considerable learning by doing, such that a move towards a phase of more fundamental changes could realize significant learning economies.

55. The report of the Secretary-General on the 10-year framework of programmes on sustainable consumption and production for the eighteenth session of the Commission on Sustainable Development reviewed programmes that had been successfully piloted and, in some cases, implemented for several years and in several jurisdictions. Experience has been accumulated and tools developed to scale up or expand these programmes, such as sustainable public procurement. Others have less maturity and would need to be further piloted; implementation guidelines and tools would need to be developed. In all cases, capacity-building and dissemination of knowledge through communities of practice would be important. In cases in which maturity has been achieved, the 10-year framework of programmes could focus on networking the communities of practice to foster peer-to-peer learning, providing web-based knowledge platforms and clearing houses in different languages to raise awareness and offering capacity-building to countries and jurisdictions that need it. In cases in which more knowledge of what works is needed, networks and partnerships could focus on conducting pilots that can generate comparable knowledge and on creating tools and training materials adapted to different socio-economic and cultural environments. In cases in which changing sustainable consumption and production patterns involves changing administrative instruments, laws, regulations and fiscal policies, then capacity-building, template policies, policy tools and training materials could also be generated and shared with decision makers through capacity-building efforts.

A. Lessons learned and gaps

56. New knowledge and development is needed in the following areas identified under the Marrakech process:

(a) More experimentation and learning is needed to understand what mixes of policy, regulatory and fiscal instruments are effective to promote sustainable consumption and production broadly among producers and consumers;

(b) New knowledge and development is needed regarding how to raise awareness on sustainable consumption and which tools can reorient consumer behaviour and lifestyles;

(c) More concerted and coordinated actions are needed to achieve transformational changes in consumption and production patterns and to overcome inertia, with developed countries taking the lead,

(d) More, and more effective, partnerships among business, Governments and international financing institutions and other stakeholders, with clearly defined, time-bound performance objectives, are needed to speed up the shift to sustainable consumption and production patterns;

(e) Mechanisms need to be in place to ensure that producers, especially small-scale producers in developing countries, have the capacity to benefit from supplying better and more sustainable products;

(f) There is a need to focus on identifying key priority areas in which international cooperation is needed to increase resource efficiency and achieve decoupling while supporting upward convergence of living standards;

(g) Developing and emerging countries will be the major growth poles of the world economy in the coming decades. If sustainable consumption and production is to be achieved, these countries will need to be an integral part of the development of resource- and energy-efficient technology. Indeed, much innovation is already happening in that regard, more could happen through international technology cooperation;

(h) More needs to be done to make the business and economic case for sustainable consumption and production and to engage development cooperation agencies and regional and international financial institutions, given the important role they play in building infrastructure and technology through their capital investments;

(i) Programmes to engage the finance and planning ministries of Governments with development agencies and international financing institutions to mainstream sustainable consumption and production into their investment planning could ensure that the investments in infrastructure that are now being made at an increasing rate in emerging and developing economies would leapfrog ahead, avoiding costly locked-in investment;

(j) Cooperation with mass media and school systems to inspire citizens, including young people, to change unsustainable practices and adopt sustainable lifestyles is crucial.

57. Several Governments have also recently put in place large-scale programmes related to sustainable consumption and production that will provide lessons down the road. The Chinese "circular economy" approach is being applied in Guiyang, which is serving as the first pilot city in China to become an ecologically sustainable city. Its master plan stimulates sustainable consumption and production patterns through demonstration programmes of transforming industrial parks into eco-industrial parks and through the initiation of programmes for cleaner production, ecotourism and municipal waste management. The "getting more from less" initiative in Finland has been introduced in order to leverage eco-efficiency in production throughout product chains. Dematerialization while attaining an improved quality of life is Finland's vision for sustainable consumption. Japan has launched a plan for a "sound material-cycle society". This 10-year programme contains key targets that focus on reducing material input through reuse and recycling. Japanese consumer responsibility is emphasized in prioritized local programmes. Senegal initially started its 10-year framework of programmes on sustainable consumption and production with an extensive analysis of the country's resources, practices and environmental impacts in order to improve the institutional framework for environmental management and develop practical programmes related to sustainable consumption and production. In the United Arab Emirates, Masdar City is one of the key examples in the Middle East in which sustainable consumption and production is addressed at all levels of society. Masdar City aims to achieve a zero-carbon and zero-waste economy, with clean technology, sustainable buildings and the replacement of cars with advanced public transportation systems.

B. Submitted programmes

58. To complete the present list, the secretariat of the Commission on Sustainable Development has issued a call to Governments, United Nations agencies and major groups to submit programmes, by following a common template, for possible inclusion in the 10-year framework of programmes, depending on the decision of Member States. Items to be filled are illustrated in the annex to the present document, which includes the programme submitted by Finland and the European Commission on sustainable buildings and construction.

59. Forty programmes activities were initially submitted, which were consolidated into 36 programmes after the submitters who were informed that they had submitted programmes in similar areas decided to submit a joint programme. Two programmes that follow from the work of the Marrakech process task forces were submitted by the leading countries (Finland and Germany) and another three by UNEP, in collaboration with the countries that lead the task forces (France, Switzerland, Sweden and Italy). The Partnership for Education and Research about Responsible Living, which emerged with the cooperation of the Swedish- and Italian-led task forces, submitted a programme on education and awareness-raising for sustainable lifestyles. The United Nations Environment Programme and the Department of Economic and Social Affairs are the only United Nations entities that submitted programmes. UNEP submitted 12 programmes and the Department of Economic and Social Affairs submitted two. In addition to the three programmes listed above, UNEP developed programmes to address the areas of priority in existing regional strategies related to sustainable consumption and production. Nineteen programmes were submitted by major groups, varying in focus from agriculture to consumer guidelines and in scale from the country and regional level to the global level.

60. They provide a starting point for the discussions of Member States on the type and structure of programmes that they may want to include in the 10-year framework of programmes. Ideally, programmes or combinations of them would address issues holistically, using a life-cycle approach. A quick look at the table below reveals that programmes to address the distribution and marketing and the integrated waste management stages of the life cycle are missing and that few regulations or fiscal policies are proposed. The list of programmes will no doubt be refined and tailored, with some programmes dropped and additional ones added prior to the nineteenth session of the Commission on Sustainable Development in order to fill remaining gaps. Some of the programmes submitted, for instance, are really activities that could be included in a broader programme.

Programmes received classified by stages of the life cycle and types of instruments

Life cycle stages instruments	Type of instruments					Mix of instruments across stages
	Laws and regulations	Fiscal and economic (eco- taxes, pricing)	Planning (institution, investment and infrastructure)	Information and analytical tools education	Voluntary tools and approaches	
Production processes	Cap and share	Global monetary governance	Agricultural landscape fund for Africa, eco-village approach to rural development and technological and institutional innovations for resource efficiency	Innovation for resource efficiency	Resource efficiency in small and medium enterprises, corporate social and environmental responsibility, low- carbon industrial manufacturing, urea deep placement and private sector work on water efficiency	Agri-food
Better products and services			Sustainable procurement, procurement based on International Standard 26000 of the International Organization for Standardization and responsible procurement of Amazon timber	Product sustainability assessment and information	Labelling for sustainable products	
Distribution and marketing					"One planet living" campaign	
Sustainable consumption and living			Sustainable buildings and construction, sustainable cities (2) and sustainable management in the public sector	Education and awareness- raising, consumer protection guidelines (as per para. 1 (g) of the United Nations Guidelines for Consumer Protection (as expanded in 1999)) and improved communication with consumers	Establishing commons trusts; sustainable lifestyle and consumption	

Life cycle stages instruments	Type of instruments					Mix of instruments across stages
	Laws and regulations	Fiscal and economic tools (taxes, profits)	Planning (institutional systems and infrastructure)	Information and analytical tools, education	Voluntary tools and approaches	
Integrated waste management						
Cross-stage strategies			Mainstream sustainable consumption and production in planning and development strategies	Scientific knowledge access for civil society organizations, regional and international networks of civil society organizations that focus on sustainable consumption and production, and researchers who focus on sustainable consumption and production	Indicators to monitor sustainable consumption and production; indicators and framework to monitor resource efficiency and decoupling	Sustainable tourism and assessing progress towards sustainable consumption and production

The table in the annex to the present document includes a complete listing of the projects, who submitted them and the instrument used for each stage of the life cycle of products and services.⁸

V. Way forward

61. It is clear that active public policy intervention will continue to be needed in order to overcome barriers to progress on changing sustainable consumption and production patterns and that policy coordination and coherence is needed to overcome fragmentation, duplication and dissonance. More programmes and initiatives are needed within a unifying framework of programmes.

⁸ The details of each programme are available as background paper No. 2 on "Potential programmes for inclusion in the 10-year framework of programmes on sustainable consumption and production" for the intersessional meeting described in footnote 4.

A. Possible shape of an agreement at the nineteenth session of the Commission on Sustainable Development

62. The objective of reviewing six existing models of institutional structure is not to suggest that any one of them could be adopted wholesale; rather, each model has some features that could be incorporated into an optimal institutional structure for the 10-year framework of programmes. The selection of the features, and the manner in which they are put together, will depend to a large extent on the priority accorded to the relevant criteria, as well as the level of political ambition for the 10-year framework. As they discuss the shape of the framework, Member States and other stakeholders will want to consider the following:

(a) How critical are common goals to the achievement of the objectives of the framework? Would the success, acceleration, synergy and ownership of programmes related to sustainable consumption and production require broad goals or specific ones, global goals or ones differentiated across countries and sectors, and long-term goals or a mix of long- and short-term ones?

(b) Would success require a decentralized institutional body with loose interaction, or a global entity with distributed representation?

(c) What kind of involvement of United Nations system entities will ensure success in the goals? How should civil society, business and subnational entities participate in the institutional structure and its governance and implementation arrangements?

(d) What secretariat functions are needed and who should perform them? How should they be divided among different United Nations organizations and agencies, based on their comparative expertise?

(e) What sort of funding will be needed to support the 10-year framework of programmes, and for what purpose? The same questions apply for technical assistance, which also may require funding.

(f) How will progress in implementation be monitored and reported, and to which forum will such information be reported, to ensure progress towards establishing sustainable consumption and production patterns?

Potential vision and goals

63. Several issues are relevant to the present discussion. First, the experience of the Millennium Development Goals suggests that universally endorsed goals have helped to set the agenda and galvanize actions by the international community, civil society and the business sector. The 10-year framework of programmes could build on that experience.

64. As has been shown by the experience of the Marrakech process, however, any goals, as well as any priority actions and programmes, will need to vary among countries and regions at different levels of development, with different levels of resource endowments and institutional types, in accordance with the principle of common but differentiated responsibilities and respective capabilities. Goals must therefore be broad enough to galvanize action and flexible enough to allow for variations in national and regional programmes. The Commission on Sustainable Development could use the vision and goals developed under the Marrakech process

as a starting point for discussing vision and goals as part of a 10-year framework of programmes.⁶

65. Furthermore, to recall once again the experience of the Millennium Development Goals, high-level endorsement would be necessary to ensure that sustainable consumption and production enjoys broad support within Governments, including not only the environment ministries but also the other relevant and important ministries, including ministries of industry, finance, planning, energy, agriculture, health and development cooperation.

66. This suggests that one plank of the 10-year framework of programmes, to be adopted by a decision at the nineteenth session of the Commission on Sustainable Development, could consist of a renewed commitment to changing unsustainable patterns of consumption and production, with all countries taking action and developed countries taking the lead (as stated in the Johannesburg Plan of Implementation) and with concrete goals for each sector or stakeholder entity, as well as for the developmental and environmental dimensions. Previous outcomes of the Commission, as well as General Assembly resolutions, could be used as a starting point for developing the goals. For instance, the goals for energy consumption might encompass energy efficiency, energy access and clean energy dimensions.

Potential endorsement of programmes

67. The purpose of programmes is to render a degree of concreteness to the 10-year framework of programmes. These may be based on national and regional experiences (e.g., under the Marrakech process), recent consensus decisions by the General Assembly or other intergovernmental bodies and decisions of the Commission on Sustainable Development on priority themes and sectors. For instance, programmes that capture low-hanging fruit or immediate win-win results in terms of resource efficiency and costs could be prioritized. These programmes could serve to concretize goals and targets, allocate responsibility for mobilizing and organizing support by the international community, provide a focus for follow-up monitoring and assessment actions of voluntary initiatives and enable seed funds to be realized.

68. Rapid implementation of the 10-year framework of programmes will likely require dedicated funds to encourage Governments and stakeholders to prioritize sustainable consumption and production, support demonstration projects and, in the process, initiate a cycle of learning on sustainable consumption and production, as in the Strategic Approach to International Chemicals Management and the Consultative Group on International Agricultural Research Challenges, for instance, to full implementation of the Strategic Approach, which offers a non-legally binding international policy framework, include the lack of resources needed for capacity-building, institutional strengthening and other activities; uneven engagement across key sectors; and the difficulty of monitoring progress on a continual basis.

⁶ Marrakech process secretariat (the Department of Economic and Social Affairs and United Nations Environment Programme), with input from the Marrakech process advisory committee, "Paving the way to sustainable consumption and production: Marrakech process progress report, including elements for a 10-year framework of programmes on sustainable consumption and production", Background Paper No. 4 to the eighteenth session of the Commission on Sustainable Development.

6/9. Countries could also have access to achievement funds modelled after the Millennium Development Goal Achievement Fund or the Quick Start Programme of the Strategic Approach in order to encourage a higher level of ambition in their goals.

Implementation arrangements

70. Given the breadth of the sustainable consumption and production agenda, a dual-track approach might be needed to endorse immediately goals in areas in which consensus is emerging, such as energy, water and material efficiency, and to develop those goals in other areas in which consensus will have to be built by all stakeholders over time, such as sustainable consumption and lifestyles.

71. Member States will be mindful of the cost involved in implementing the 10-year framework of programmes. They have also shown reluctance to create new institutions and agencies. Cost-effectiveness could be improved through an institutional structure involving the broader United Nations system, with each entity offering its specialized expertise in a distributed secretariat, to support the implementation of national and regional initiatives in agreed-upon global priority areas. Given the cross-cutting nature of sustainable consumption and production, instead of seeing it as the all-encompassing framework that subsumes all other work, such a framework could provide a set of principles and prescriptions for action that can inform and be incorporated into the ongoing programmes of all agencies and Member States (as in the case of the Millennium Development Goals) across the full spectrum of issues.

72. Defining a sufficiently responsive and flexible governance mechanism to enable the 10-year framework of programmes to be further developed and efficiently implemented will be key. It is clear that the United Nations agencies, through their specialized expertise, can contribute to and support the implementation of national and regional initiatives in agreed-upon global priority areas. While diffused responsibility would represent an acknowledgement of the breadth of the sustainable consumption and production issue, the diversity of the stakeholders involved and the broad range of expertise necessary for successful implementation, it can create coordination and accountability challenges. Creating a coordinating secretariat could provide more focused delivery of support for the shift to sustainable consumption and production and clearer accountability.

73. A 10-year framework of programmes would benefit from a formal structure for knowledge-sharing, creating tools, networking and delivering technical assistance. National focal points could be identified and links forged between national programmes and regional knowledge centres on sustainable consumption and production, with the regional knowledge centres possibly located within existing research centres, think tanks and universities. The regional centres would presumably have different areas of focus and expertise, depending on regional priorities. Networks of such centres and national institutions could be formed around specific issues related to sustainable consumption and production. As with the experience of the Consultative Group on International Agricultural Research with the national agricultural research systems, these centres may need capacity-building, for which an initial programme of technical support could be envisaged.

74. Once Member States have agreed on important functions and the level of ambition of the 10-year framework of programmes, key features from the models reviewed could be selected. Assuming that pooling of expertise, including through

research centres, networking and knowledge banks, is considered a key function, then the features of the Consultative Group on International Agricultural Research and the United Nations inter-agency model could be borrowed. If high-level commitments to a global programme of action or broad stakeholder involvement in decision-making are deemed important, then the features of the Strategic Approach to International Chemicals Management or the Millennium Development Goals could be favoured. If secure and predictable funding is important, then the Global Alliance for Vaccine and Immunization and the Consultative Group offer interesting features, as do the Strategic Approach and the Millennium Development Goals funds.

75. Partnerships have played an important role in preparing, and will continue to be important in implementing, the 10-year framework of programmes. Two Commission on Sustainable Development partnerships were created out of the Marrakech process task forces: the Marrakech Process Task Force on Cooperation with Africa (in 2008) and the Partnership for the Launch of the Sustainable Tourism Stewardship Council (in 2009). Several Member States and major groups have submitted potential programmes for inclusion in the 10-year framework of programmes that are based on a partnership, either pre-existing or formed for the purpose of creating the programme. The possibility of launching them or others as Commission on Sustainable Development partnerships at the nineteenth session should be seriously considered.

B. Bridge to the United Nations Conference on Sustainable Development

76. Several Member States and major groups have expressed a keen interest in having a solid decision on the 10-year framework of programmes on sustainable consumption and production at the nineteenth session of the Commission on Sustainable Development. The 10-year framework of programmes can be an important engine to support the broader international sustainable development agenda, by promoting rapid convergence towards decent living standards paralleled by rapid improvements in resource-use efficiency and reductions in environmental impacts. It could also provide one important building block for an ambitious international agreement at the United Nations Conference on Sustainable Development, to be held in Brazil in 2012, on advancing sustainable development.

Annex

Examples of submitted programmes: sustainable buildings and construction

Goals and objectives

The overall target would be to mainstream more sustainable construction practices at the national and local levels as business-as-usual. The policies on sustainable construction will therefore need to be mainstreamed in different sectors, with a particular emphasis on energy efficiency and the eradication of energy poverty.

Possible concrete targets

- Reduction of CO₂ emissions from the construction, including the production of construction materials, and operation of buildings by x per cent by 2020 and by y per cent by 2030;
- All new and refurbished public buildings to have zero emissions and zero waste;
- Decrease in the number of people living in slums, without access to freshwater and sanitation or clean and affordable energy, by zz per cent each year.

Justification of the programme

Buildings and their construction, maintenance, operation, refurbishment and demolition have an enormous impact on natural resources, economies, employment, human health and the functioning of societies. About 40 per cent of all produced energy is consumed in buildings; the savings potential is huge — in functions like heating, cooling, lighting, the production of construction materials, the heating and pumping of water and the use of home electronics and other devices.

To achieve a built environment that is sustainable, there is a need to use a mix of policy measures, targeting both the consumer and producers.

Market mechanisms are very effective drivers for the most innovative companies that want to become front-runners in their fields. Innovative companies will develop their products and services based on future “green” demand. At the same time, the public sector can advance sustainable development with regulatory policies and various financial and taxation tools. Public procurement has the potential to shift the market to more sustainable production.

Activities and policies

The programme would scale up existing initiatives (e.g., the Marrakech Task Force on Sustainable Buildings and Construction, regional strategies for sustainable consumption and production in Africa and the Sustainable Buildings and Climate Initiative of the United Nations Environment Programme (UNEP)).

The programme also has direct linkages with climate policy, because one of the key areas on which building and construction policies can focus easily is energy efficiency. The programme has the potential to significantly contribute to international discussions on climate change mitigation (under the auspices of the

United Nations Framework Convention on Climate Change). Efforts to reach climate change mitigation targets would benefit if energy efficiency and greenhouse gas emission reduction programmes in the built environment were recognized as nationally appropriate mitigation actions.

In addition to contributing to the implementation of the United Nations Framework Convention on Climate Change, the programme would also strengthen the implementation of other multilateral environmental agreements such as the Convention on Biological Diversity, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the chemical conventions and the Convention on Long-Range Transboundary Air Pollution.

The programme will also assist in achieving the objectives of poverty reduction strategies by decreasing the number of people living in slums, without access to freshwater and sanitation or energy. Specific activities could include:

- Awareness-raising at different levels and scales (e.g., communications campaigns, making the business case, demonstration projects and best practices);
- Capacity-building adapted to regional and local needs;
- Mechanisms for the coordination and enforcement of policies;
- Locally developed national evaluation systems for building performance;
- Monitoring tools, such as energy consumption benchmarks for sustainable buildings;
- Introduction of sustainability criteria in building procurement policies;
- Inclusion of valuation of buildings in financial and fiscal considerations;
- A systemic approach, meaning integration of land use and infrastructure (water, energy, transport, housing and services) planning;
- Pilot projects.

Delivery mechanisms of the programme

The programme would provide a global platform for dialogue and collective action from stakeholders in the buildings sector to address sustainability, develop tools and strategies for achieving a wide acceptance and adoption of sustainable building practices throughout the world, and employ pilot projects as demonstrations.

Leading actors

An example of leading actors would be the Sustainable Buildings and Climate Initiative of UNEP, in collaboration with different regional, national and local sustainable consumption and production initiatives.

Metrics of success and possible indicators

The Millennium Development Goals target for slum-dwellers to be reformulated more ambitiously:

- X countries to have an enabling framework (legislation, institutions, authorities and enforcement) for sustainable buildings and construction in place;
- X countries to have created a national platform to promote sustainable construction, bringing together the main actors of the sector;
- X countries to have introduced national-level financing instruments, such as reinvestment of savings from the increased energy efficiency of public buildings into poverty alleviation programmes.

Technical and financial resources

All relevant existing funding sources at the international, regional and national level.

Potential programmes on sustainable consumption and production submitted by Member States, agencies and major groups

<i>Name of programme</i>	<i>Instruments</i>	<i>Stage of the life cycle</i>	<i>Submitted by</i>
Cap and share	Laws and regulations	Production processes	Feasta Climate Group
Global monetary governance	Fiscal and economic instruments	Production processes	Tierra Fee and Dividend
Agricultural landscape fund for Africa	Planning, institution, investment and infrastructure	Production processes	Ecoagriculture Partners
Integrated, multisectoral community-based approach to sustainable development in rural areas and impoverished urban areas	Planning, institution, investment and infrastructure	Production processes	EcoEarth Alliance (partnership of the Department of Economic and Social Affairs and the Division for Sustainable Development)
Technological and institutional innovations for resource efficiency	Planning, institution, investment and infrastructure	Production processes	UNEP
Sustainable public procurement	Planning, institution, investment and infrastructure	Better products	UNEP Switzerland
Procurement based on International Standard 26000 of the International Organization for Standardization	Planning, institution, investment and infrastructure	Better products	Consumers International
Responsible procurement of timber in Brazil	Planning, institution, investment and infrastructure	Better products	Friends of the Amazon Network

<i>Name of programme</i>	<i>Instruments</i>	<i>Stage of the life cycle</i>	<i>Submitted by</i>
Sustainable buildings and construction	Planning, institution, investment and infrastructure	Sustainable consumption and living	Finland European Union
Sustainable cities	Planning, institution, investment and infrastructure	Sustainable consumption and living	Department of Economic and Social Affairs and Division for Sustainable Development
Sustainable management in the public sector	Planning, institution, investment and infrastructure	Sustainable consumption and living	UNEP
Sustainable urban development and cities	Planning, institution, investment and infrastructure	Sustainable consumption and living	UNEP
Mainstreaming sustainable consumption and production into planning and development strategies and poverty reduction plans	Planning, institution, investment and infrastructure	Cross-stage strategies	UNEP
Innovation for resource efficiency	Information and analytical tools, education	Production processes	UNEP
Product sustainability assessment and information	Information and analytical tools	Better products	UNEP
Education and awareness-raising for sustainable living	Information and analytical tools	Sustainable consumption and living	Partnership for Education and Research about Responsible Living
Consumer protection guideline (para. 1 (g) of the United Nations Guidelines for Consumer Protection (as expanded in 1999))	Information and analytical tools	Sustainable consumption and living	Consumers International
Improved communication with consumers	Information and analytical tools	Sustainable consumption and living	Consumers International
Scientific knowledge access for civil society organizations	Information and analytical tools	Cross-stage strategies	Sustainable Europe Research Institute
Partnership on common knowledge for sustainable consumption and production	Information and analytical tools	Cross-stage strategies	International Coalition for Sustainable Production and Consumption

<i>Name of programme</i>	<i>Instruments</i>	<i>Stage of the life cycle</i>	<i>Submitted by</i>
Global research network for sustainable consumption and production	Information and analytical tools	Cross-stage strategies	International Coalition for Sustainable Production and Consumption
Regional and international networks of civil society organizations working on sustainable consumption and production and of researchers working on sustainable consumption and production	Information and analytical tools	Cross-stage strategies	International Coalition for Sustainable Production and Consumption
North American Round Table on Sustainable Production and Consumption	Information and analytical tools	Cross-stage strategies	International Coalition for Sustainable Production and Consumption
International coalition for sustainable production and consumption	Information and analytical tools	Cross-stage strategies	International Coalition for Sustainable Production and Consumption
Mapping the movement	Information and analytical tools	Cross-stage strategies	International Coalition for Sustainable Production and Consumption
Resource efficiency and eco-innovation for small and medium-sized enterprises	Voluntary tools and approaches	Production processes	UNEP
Low-carbon industrial manufacturing	Voluntary tools and approaches	Production processes	World Harmony Foundation
Urea deep placement	Voluntary tools and approaches	Production processes	International Fertilizer Development Center
Private sector contribution to water efficiency	Voluntary tools and approaches	Production processes	Israeli private sector
Labelling for sustainable products	Voluntary tools and approaches	Better products	Germany European Union
"One Planet Living" campaign	Voluntary tools and approaches	Distribution and marketing	BioRegional Development Group
Establishing commons trusts	Voluntary tools and approaches	Sustainable consumption and living	Global Commons Trust/Association of World Citizens

<i>Name of programme</i>	<i>Instruments</i>	<i>Stage of the life cycle</i>	<i>Submitted by</i>
Sustainable lifestyles and consumption	Voluntary tools and approaches	Sustainable consumption and living	UNEP Sweden
Indicators of sustainable consumption and production	Voluntary tools and approaches	Cross-stage strategies	European Environment Agency
Research and science initiative for assessing global progress towards sustainable consumption and production	Voluntary tools and approaches	Cross-stage strategies	UNEP
Sustainable agro-food systems	Mix of instruments along stages	Production processes	UNEP
Sustainable tourism	Mix of instruments along stages	Cross-stage strategies	UNEP France